June 1999

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The June *Review*

As summer and the seasonal upswing in teenage employment begin, it is appropriate that we lead this issue with an article on the risks youths face in the workplace. Janice Windau, Eric Sygnatur, and Guy Toscano find that 15-year-olds have about the same risk of fatal injury as adult workers and that 16- and 17-year-olds have fatality rates about three-quarters that for all workers combined. Still, more than 400 youths 17 and younger were killed on the job between 1992 and 1997, and, as the authors observe, "youth fatalities and other serious injuries tend to have a greater emotional impact on society, and concerns for their safety will continue to be an important consideration."

John W. Ruser looks at another important issue in occupational injury and illness data. The overall incidence of workplace injuries and illnesses was 7.1 cases per 100 workers in 1997—the lowest rate since the Bureau of Labor Statistics began reporting these data in the early 1970s. Within that decline, there has also been a change in the way the more serious cases are treated: Cases with lost work time are now less likely to involve days totally away from work and more likely to involve a return to restricted work activities. Ruser attributes the change to a possible decrease in the severity of injuries combined with a trend toward more quickly returning affected workers to the job.

Daniel Hecker extends the popular exercise of identifying and counting "high-tech" employment. Noting the "fairly wide agreement on the general characteristics of high-technology industries," his article suggests a more expansive definition of high-tech employment should also include a portion of employment in other industries that are suppliers to the high-tech sector and workers in high-tech occupations—such as engineers and scientists—throughout the rest of the economy.

Kenneth J. Stewart and Stephen B. Reed have reconstructed the Consumer Price Index along the lines it would have looked like if today's methods had been in place starting in 1978. Their results, "CPI research series using current methods (CPI-U-RS)," is not an official series, but is deemed good enough for research work. As such, this most detailed and systematic estimate of a historically consistent CPI series can serve as a valuable tool for researchers needing estimates of past inflation as it would have been measured using the Bureau's current (1999) methodology.

Lawrence Klein Awards announced

For the past three decades, the annual Lawrence R. Klein Award has honored the best articles appearing in the *Monthly Labor Review*. The award was established in honor of Dr. Klein, who, upon his retirement after 22 years as editor-in-chief of the *Review*, established a fund to encourage a continuing high level of writing in our pages.

This year, the Klein Award trustees selected "The 1996 grain price shock: how did it affect food price inflation?" by Jerry L. Light and Thomas J. Shevlin as the best article from within the Bureau of Labor Statistics. Among articles by authors outside BLS, the trustees selected "New views of inequality trends in Canada and the United States," by Michael C. Wolfson and Brian B. Murphy of Statistics Canada.

BLS reports on women's earnings

Median weekly earnings of female full-time wage and salary workers were $456 in 1998, 76.3 percent of the $598 median for men. Both the level of women's earnings and the difference from men's varied considerably by age.

Among women, 45- to 54-year-olds had the highest median weekly earnings in 1998 ($516), followed by 35- to 44-year-olds ($498). The difference between women's and men's earnings was relatively large among older workers. For workers ages 45 to 54, women's earnings were 70.5 percent of men's. Among 55- to 64-year-olds, the earnings ratio was 68.2 percent.

In contrast, young women and men under age 25 had fairly similar earnings. Median weekly earnings for women 16 to 24 years of age were $305, roughly 91 percent of the earning of young men of that age. For more information, see *Highlights of Women's Earnings*, BLS Report 928.

More workers self-employed

About 17 percent of self-employed workers were in executive, administrative, and managerial occupations in 1996. Self-employed people in this group either manage their own business or work for themselves in occupations such as accounting. The Bureau of Labor Statistics projects that these occupations will grow to an 18.7-percent share of the self-employed in 2006.

Significant opportunities for self-employment exist in professional specialty occupations. This group accounted for 14.3 percent of the self-employed in 1996. Professionals are projected to be 14.8 percent of the self-employed in 2006. For more information, see "Considering self-employment: What to think about before starting a business," *Occupational Outlook Quarterly*, Summer 1999.

Beginning in this issue

This issue hosts the debut of a new department, "Regional trends." Kenneth D. LeVasseur and his colleagues in the Bureau of Labor Statistics Division of Local Area Unemployment Statistics plan to contribute a series of reports based on regional tabulations from the Current Population Survey. They kick off the new department with reports on union membership and multiple jobholding by State.

Profile of work injuries incurred by young workers

Hazardous environments put youths at risk of serious injuries: young workers have been killed on construction sites, during robberies while tending retail establishments, and while working on farms; common nonfatal injuries include sprains and strains, burns, cuts, and bruises

Janice Windau,
Eric Sygnatur,
and
Guy Toscano

Over the period from 1992 to 1997, 403 youths aged 17 years and under were killed on the job. These fatal incidents occurred primarily in agriculture, retail trade, construction, and services. One-third of the deaths occurred in family businesses, and about one-half involved various types of vehicles and equipment. Work fatalities among youths, to some extent, mirrored those incurred by older workers: the incidents resulted mainly from homicides, highway crashes, tractor rollovers, falls, electrocutions, and falling objects.[1]

This article discusses youth employment and the associated risks. It first presents a historical summary of youth employment in the United States, then examines data on fatal work injuries among young persons, comparing their risks with those of all workers and providing a detailed look at the events, equipment, and industries associated with these workplace fatalities. Finally, the article provides an overview of the nonfatal injuries incurred by young workers during 1996.

Youth employment, historically

The images evoked by the phrase "child labor" have changed dramatically over time.[2] Early in U.S. history, children helped contribute to the family unit with their labor. These contributions provided families with additional and often necessary sources of food or income; they also served as part of a child's upbringing and preparation for adulthood. Indeed, it was believed that work was morally edifying: industriousness was widely considered a virtue and idleness a sin; with work came character, responsibility, and thrift. Many believed that unemployed youths eventually would augment the "poor, idle, vicious elements of society."[3]

The industrial revolution changed a predominantly rural populace into an urban one. Many workers left their homes and fields and migrated to cities to find work. Labor shortages created by the many new factories often were remedied by employing children. Many considered this type of work no less fulfilling than the traditional role children played in the labor market—providing extra income for the family while building a sense of self-reliance. In 1791, Alexander Hamilton noted the social benefits resulting from the mixture of manufacturing and youth employment: "In general, women and children are rendered more useful, and the latter more early useful, by manufacturing establishments, than they would otherwise be."[4] Youths worked not only in factories, however; many also worked as errand boys, messengers, butcher's assistants, vendors, and newsboys.

As U.S. society evolved, so too did the demands and expectations for education. Literacy had long been important as a means for people to read the Bible. Long days and weeks spent working made it difficult for youths to study. Thus, in 1813, Connecticut passed laws requiring manu-

Janice Windau is an epidemiologist and Eric Sygnatur and Guy Toscano are economists, all in the Office of Safety, Health, and Working Conditions, Bureau of Labor Statistics.

facturers to provide young persons in their employ with skills in reading, writing, and arithmetic. In 1836, Massachusetts passed similar legislation, requiring that children spend a minimum of 3 months per year in school.

By the early 1900s, the often dangerous working conditions of some occupations were well known, propagated by news articles and photographs. Public opinion, fueled by these powerful images and influenced by the education movement, began to turn against child labor. As a result, States passed laws restricting the hours children could work and established a minimum age of employment for young workers. Several attempts by the Federal Government to pass similar laws were struck down by the Supreme Court on the grounds that they were unconstitutional.

President Franklin D. Roosevelt, a strong proponent of child labor laws, significantly changed the makeup of the Supreme Court during his long tenure as President, and the Fair Labor Standards Act was enacted in 1938 and upheld by the Supreme Court in 1941. The Act, the primary Federal law governing child labor, sets limits on the hours that those younger than 16 years may work and restricts persons under age 18 from working in certain hazardous nonagricultural occupations. It also sets age limits and restricts the types of work activities youths can perform on farms other than those owned or operated by their parents. Other Federal laws, such as the Occupational Safety and Health Act of 1970, regulate the workplace for workers of all ages. Additionally, each State has its own set of child labor laws that are sometimes more restrictive than standards set by Federal law. [5]

During the Second World War, greater proportions of women participated in the labor force than had previously, and child labor became less prevalent. A greater emphasis on the importance of education also emerged. For these and other reasons, following the war, most employed youths worked only in part-time jobs. Many of the traditional values associated with youth employment, such as self-reliance and responsibility, are still highly regarded and widely recognized. Hence, by the time they reach age 18, most young people have engaged in some form of employment.

Some disagreement still exists on the appropriate role of work for today's youths. Some of the pending issues revolve around the number of hours a young person should be permitted to work, whether the current definition of "hazardous" (and, therefore, restricted) work is adequate, and whether agricultural occupations should be more closely regulated.

Fatal injuries, 1992–97

Over the 1992–97 period, on average, 67 persons under the age of 18 died each year from injuries incurred on the job, which is about 1 percent of the total number of work fatalities that occurred over that period. Because both the number of workers in a particular group and the amount of time spent on the job affect fatality counts, fatality *rates* are used to evaluate workers' risks of incurring fatal work injuries. Fatality rates are standardized—usually expressed as the number of fatalities per 100,000 workers—to facilitate comparisons between worker groups with varying exposure levels.[6]

About 3 million youths hold jobs each year, often for short periods and primarily in part-time jobs. The length of time that they are exposed to workplace hazards is, therefore, less when compared with full-time workers. Because of this, rates based on exposure hours were used to evaluate fatality risk. These rates were calculated using actual hours worked for persons in that age group, converted to full-time equivalents (2,000 hours worked per employee, per year). Employment-based rates also were calculated, but studies have shown them to be less accurate when comparing fatality risks for worker groups with widely varying hours of exposure. Employment-based rates typically underreport fatality risks for workers in the youngest and the oldest age categories because these workers are more likely to work part-time.[7]

The following tabulation shows the number of fatalities occurring during the 1992–97 period, and the average fatality rate per 100,000 workers (excluding military and workers under age 15), based on employment and hours worked:

	Number of fatalities		Fatality rate, based on:	
	Total	*Annual average*	*Employment*	*Hours worked*
Total, all ages	37,875	6,313	5.0	5.0
Under 15 years	109	18	[1]	[1]
15 years	46	8	1.8	5.1
16 years	91	15	1.6	3.4
17 years	157	26	1.9	3.7

[1] Employment and hours-at-work data not available.

When comparing the whole population of workers, both methods yield a rate of 5.0 fatalities per 100,000 workers. The data also show that, in general, the risk of youths suffering a fatal injury is less than that of all workers combined. When fatality rates based on hours worked are used, 15-year-old workers have about the same risk of incurring a fatal injury as adult workers. The fatality rates for 16- and 17-year-olds, however, who make up the majority of employed youth, are about three-fourths the rate for all workers combined.[8] Although fatal injuries among the youth population occur in much the same way as those among older workers, differences in fatal events are apparent from available data.

Homicides edged out highway incidents as the leading

cause of death among youths at work. Proportionally fewer highway fatalities among young workers may result from restrictions on youths' driving as well as from the types of jobs held by young workers.[9] Vehicle-related incidents occurring on farms, industrial premises, or in parking lots, by contrast, accounted for a larger proportion of the worker fatalities among youth than among all workers. As a result, for both young and older workers, two-fifths of all fatalities involved some type of vehicle. There also were slight differences between the two groups in the share of total fatalities resulting from falls and contacts with objects and equipment. (See table 1.)

By industry. Between 1992 and 1997, 403 young workers (17 years and under) lost their lives as a result of on-the-job injuries. Two-fifths were killed while working in agriculture, and about one-fifth were killed while working for retail establishments. (See table 2.) Specific industry descriptions follow.

Agriculture. The thought of growing up on a farm often evokes images of an idyllic childhood setting with children being taught the values of daily chores, working alongside their parents or grandparents in the fresh air. Actually, however, agriculture is one of the most dangerous industries for all workers, with fatality rates that consistently rank below only those of mining, which has the highest rates. Adult and youth farmworkers routinely are exposed to many hazards, such as heavy machinery, falls, falling or flying objects, and natural hazards.

Youths working on farms perform varied tasks, such as feeding animals, gathering eggs, harvesting crops, operating equipment, and driving tractors and other vehicles. Tragedy occurs more often among young workers in this industry than in any other—40 percent of the young workers killed over the 1992–97 period lost their lives in farming jobs. All but 10 of the 162 victims were young men. Also, more than half of the fatalities occurred on farms owned by the victims' families.

More than half of the 162 youth fatalities in agriculture occurred in transportation-related incidents. (See table 3.) More specifically, nearly a third (51) involved tractors. Of the tractor-related fatalities, about half resulted from the tractor rolling over onto the worker, either in the field or on a road-

Table 1. Fatalities among young workers and all workers, by event or exposure, 1992–97

Event or exposure	Young workers (under age 18)		All workers	
	Number	Percent	Average per year	Percent
Total	403	100	6,313	100
Transportation incidents	163	40	2,589	41
Highway incidents	70	17	1,304	21
Nonhighway incidents	47	12	396	6
Worker struck by vehicle	25	6	368	6
Water vehicle	9	2	106	2
Railway	8	2	80	1
Assaults and violent acts	82	20	1,247	20
Homicide	72	18	1,003	16
Suicide	3	1	213	3
Animal attack	7	2	29	1
Contact with objects and equipment	82	20	1,004	16
Struck by	36	9	570	9
Caught in objects or equipment	25	6	295	5
Running machinery	17	4	154	2
Collapsing materials	17	4	121	2
Falls	23	6	657	10
Exposure to harmful substances and environments	44	11	588	9
Electric current	25	6	312	5
Exposure to caustic, noxious, allergenic substances	9	2	122	2
Oxygen deficiency	10	2	102	2
Fires and explosions	8	2	194	3

NOTE: Event or exposure is based on the 1992 BLS Occupational Injury and Illness Classification System. The event describes the manner in which the injury was inflicted or produced. Data may not sum to totals because of rounding and the omission of miscellaneous categories.

SOURCE: Census of Fatal Occupational Injuries.

way. About 1 in 8 occurred when the victim fell from a tractor and then was struck by the attached equipment. Other fatalities resulted from being run over by the tractor while standing in the field, being struck by the bucket of a tractor-mounted loader, or being caught in the tractor's power take-off, as shown in the following tablulation:

Incident	*Percent*
Total	100
Overturn in field	29
Overturn in roadway	25
Fall from tractor and struck by attached equipment	12
Run over by tractor	8
Struck by tractor bucket	6
Caught in power take-off	6
Other	14

In 38 of the 51 tractor-related deaths, the fatally injured youth was operating the tractor. In 20 of these instances, the youth was under 16 years of age.[10] In 7 fatalities, the victims were younger than 16 years and were driving the tractor on public roadways.[11] Youths as young as 10 were reported to have been operating a tractor at the time of the incident.[11] In about two-thirds of the tractor-related fatalities involving youths, the victim worked on the family farm. Other equipment involved in young farmworkers' deaths included front-end loaders, combines, and various other harvesters, mowers, grain augers, feed wagons, horse-drawn wagons, and pick-up trucks and other highway vehicles.[12]

Young farmworker deaths also resulted from various natural hazards, such as animal attacks, drowning, lightning, falling trees, and grain engulfments. Young persons fatally injured while working on farms typically were younger than those killed in other types of businesses. Farmworkers accounted for about three-fourths of the 109 youths under the age of 15 who were killed while on the job.

Children historically have been seen as an important source of labor on farms, a view that appears to continue today. For example, several States allow local school districts to close for several weeks during sowing and harvesting season.[13] Others allow temporary relaxation of limitations on children's work hours during these busy times on the farm. Child labor laws are less stringent in agriculture industries than in other industries, and children are allowed to operate machinery at a younger age in agriculture. Children working on a family farm are totally exempt from coverage under Federal child labor laws, unlike working children in some other types of family businesses.[14]

Retail trade and services. These two industries employ about three-fourths of all workers between the ages of 15 and 17. Eating and drinking places, grocery stores, and department stores are the most common retail establishments employing youths. In the services sector, youths are most likely to work in entertainment and recreation, health services, educational services, or in private households.[15]

The following tabulation shows the fatalities occurring in the retail trade industry among youths under the age of 18:

Event or exposure	*Number*	*Percent*
Total	87	100
Assaults and violent acts	59	68
Homicides	56	64
Transportation	16	18
Highway crashes	13	15
Struck by object	5	6
Exposure to harmful environment	4	5
Other	3	3

As shown, homicide was the leading cause of death among youths in retail trade, accounting for nearly two-thirds of the youth fatalities in the industry, a proportion similar to that of older workers in retail trade. Of the 56 homicides occurring over the study period, 23 (41 percent) were confirmed robberies, and in another 21 cases, the motive was not evident. Combining the two, robberies probably were the cause of between one-fourth and one-half of all youth fatalities in retail trade. Transportation incidents were the second most common cause of youth fatalities in the retail trade industry, with most occurring on public roadways; about a third of the victims were newspaper carriers.

Three-fourths of the young workers killed in retail trade worked in either a restaurant or a food store, such as a gro-

Table 2. Fatalities among young workers and all workers, by industry, 1992–97

Industry	Young workers (under age 18)		All workers		
	Number	Percent	Average per year	Percent	Rate per 100,000 workers
Total	403	100	6,313	100	5.0
Agriculture, forestry, and fishing	162	40	827	13	23.7
Mining	—	—	167	3	26.2
Construction	53	13	1,015	16	14.3
Manufacturing	21	5	750	12	3.7
Transportation and public utilities	12	3	935	15	13.2
Wholesale trade	14	3	257	4	5.3
Retail trade	87	22	728	12	3.5
Finance, insurance, and real estate	—	—	115	2	1.5
Services	32	8	772	12	2.3
Government	13	3	682	11	3.5
Other or unspecified industries	7	2	66	1	—

NOTE: Dashes indicate that no data were reported or that data do not meet publication standards. Percents may not sum to 100 due to rounding.
SOURCE: Census of Fatal Occupational Injuries.

cery or convenience store, or a bakery. Males accounted for 74 percent of retail fatalities, and women, 26 percent, with assaults accounting for the vast majority among both sexes. About 11 percent of the fatality victims worked in family businesses (half in food stores), and 5 percent were self-employed (all of whom were newspaper carriers).[16] More than 8 in 10 were wage and salary workers.

In the services industry, young men also accounted for three-fourths of the fatalities. In 84 percent of the fatalities, the victims were working for pay or other forms of compensation; only 9 percent worked as unpaid workers in family businesses. The remainder were self-employed or volunteer workers. In nearly a fifth of the youth fatalities occurring in services, the victims were under the age of 15. In retail trade, by contrast, while the total number of fatality victims under age 15 was greater, their proportion was smaller (7 percent).

As the following tabulation shows, transportation-related incidents were the leading causes of death among young workers in the services industry. Homicides and exposures to harmful environments, such as electrocutions and drownings, were the next most common events.

Event or exposure	*Number*	*Percent*
Total	32	100
Transportation	13	41
Homicide	8	25
Exposure to harmful environment	6	19
Other	5	16

Construction. The construction industry reports more job-related fatalities each year than any other industry. During the 1992–97 study period, on average, about 1,000 workers were killed each year in the industry (all age groups). The fatal-injury rate facing its 7.5 million workers is 3 times greater than the rate for the average worker in all industries. The fatality rate for workers in construction was 14.3 per 100,000 over the study period, compared with a rate of 5.0 per 100,000 for all workers. (See table 2.)

From 1992 to 1997, 53 youths under the age of 18 were killed in the construction industry, accounting for about 13 percent of all fatalities in this age group over the period. By contrast, 16 percent of all workers killed on the job during the period worked in the construction industry. The majority of the youths killed worked as construction laborers, particularly for special trade contractors engaged in such activities as roofing and concrete work. Examples of tasks they performed included digging foundations and ditches, moving and stacking lumber, and erecting or dismantling scaffolding. As can be seen in the following tabulation, their fatalities were dispersed by event and exposure, mainly due to the multitude of tasks performed.

Table 3. Fatalities among young workers (under age 18) in agriculture, 1992–97

Event	Number	Percent
Total	162	100
Transportation	87	54
Off highway	40	25
Overturning and falls	35	22
Highway	27	16
Overturning	20	12
Worker struck by vehicle	10	6
Struck by object	15	9
Caught in running equipment	14	9
Grain engulfments	7	4
Animal assaults	7	4
Falls	5	3
Drowning, oxygen deficiency	5	3
Struck by lightning	4	2
Other	18	11

NOTE: The event is based on the 1992 BLS Occupational Injury and Illness Classification System. The event describes the manner in which the injury was inflicted or produced. Data may not sum to totals because of rounding and the omission of miscellaneous categories.

SOURCE: Census of Fatal Occupational Injuries.

Event or exposure	*Youths*		*All workers*	
	Number	*Percent*	*Number*	*Percent*
Total	53	100	6,087	100
Falls	12	23	1,921	32
Electrocution	11	21	830	14
Struck by object	9	17	579	10
Highway incident	6	11	715	11
Excavation and trenching	5	9	201	3
Struck by vehicle	4	8	456	8
Other	6	11	1,335	22

Falls and electrocutions were the leading causes of death for young construction workers—as well as for all construction workers. In three-fourths of the fatal falls, the youths fell from or through roofs and skylights. In contrast, these kinds of falls accounted for only about a third of the fatal falls among all construction workers. (Adult construction workers were more likely to fall from scaffolds, building girders, and ladders.) Half of the electrocutions among young construction workers resulted from contact with overhead power lines, about the same proportion as among all construction workers.

Two-thirds of the 53 killed were 17 years old, and 7 were under the age of 16. Fifteen of those killed worked for themselves or for family businesses, and about half of the fatalities occurred during June, July, and August.

Other industries. Manufacturing accounted for 5 percent of the youth fatalities. Of the 21 killed in the industry over the period, a third were newspaper carriers involved in a

vehicle-related incident or homicide.[17] One-fourth worked in logging and sawmills, where they were struck by falling trees or by vehicles. Transportation and public utilities, wholesale trade, and government each accounted for 3 percent of fatal work injuries among youths; a little more than half of the deaths in these industries resulted from vehicle-related incidents.

Nonfatal injuries, 1996

About 15,000 youths under the age of 18 incurred injuries and illnesses in 1996 that resulted in lost workdays. Due to data limitations, these figures are for private nonagricultural wage and salary workers only.[18] As can be seen from the following tabulation, sprains and strains accounted for about a third of these injuries and illnesses, most commonly resulting from overexertion while maneuvering heavy or bulky objects, such as cartons of inventory or patients in a health-care facility. These kinds of injuries sometimes also result from attempts to break falls on slippery or uneven surfaces.

Nature of injury or illness	*Percent*
Total	100
Sprains and strains	33
Bruises, contusions	14
Cuts, lacerations	13
Heat burns	9
Fractures	8
Fractures and other injuries	4
Other	19

As with their adult counterparts, nonfatal injuries occurring to youths were less likely than fatal injuries to have resulted from transportation-related incidents. (See table 4.) Similarly, assaults, the leading cause of fatal injuries among youths, accounted for only 1 percent of the total number of nonfatal injuries. Being struck by objects such as knives or other sharp tools, swinging doors, and falling boxes; overexertion in lifting, carrying, or pushing objects; and falls on walking surfaces each accounted for about one-fifth of the nonfatal injuries among youths.

Table 4. Nonfatal injuries and illnesses among young workers and all workers, by event and exposure, 1996

Event or exposure	Young workers (under age 18)			All workers		
	Number of cases	Percent	Median days away from work	Number of cases	Percent	Median days away from work
Total	15,156	100	4	1,880,525	100	5
Contact with objects and equipment	5,136	34	4	492,939	26	4
Struck against object	1,591	10	3	127,481	7	4
Struck by object	2,773	18	4	238,934	13	4
Caught in or compressed by objects or equipment	660	4	3	79,473	4	7
Rubbed or abraded by friction	85	1	1	30,087	2	1
Falls	3,510	23	4	330,913	18	7
Falls to lower level	630	4	11	98,544	5	10
Falls on same level	2,847	19	3	219,416	12	7
Bodily reaction or exertion	3,889	26	3	823,708	44	7
Bodily reaction	980	6	3	196,880	10	6
Overexertion	2,821	19	3	526,594	28	6
Repetitive motion	79	1	5	73,796	4	17
Exposure to harmful substances or environments	2,022	13	3	87,164	5	3
Contact with electric current	70	1	3	4,126	—	7
Contact with temperature extremes	1,346	9	3	29,249	2	3
Exposure to caustic, noxious, or allergenic substances	577	4	2	45,284	2	2
Transportation incidents	324	2	8	77,617	4	9
Highway incidents	58	—	6	50,466	3	9
Nonhighway incidents	79	1	4	10,558	1	7
Worker struck by vehicle	183	1	10	12,031	1	13
Fires and explosions	19	—	3	4,146	—	8
Assaults and violent acts	189	1	2	24,241	1	4
Assaults by persons	112	1	2	18,538	1	5
Animal assaults	78	1	1	5,580	—	4
Other and nonclassifiable	68	—	4	39,796	2	7

NOTE: Event or exposure is based on the 1992 BLS Occupational Injury and Illness Classification System. The event describes the manner in which the injury was inflicted or produced. Dashes indicate less than 0.5. Data may not sum to totals because of rounding and the omission of miscellaneous categories.

SOURCE: Survey of Occupational Injuries and Illnesses.

When compared with injuries incurred by adult workers, young workers' injuries were more likely to result from various contacts with objects and equipment, falls, and contacts with hot objects or substances. Injuries to adult workers, by contrast, were more likely to result from overexertion, bodily reaction, and repetitive motion. Falling from elevations and being struck by vehicles typically resulted in lengthy recuperation times for both adult and young workers.

The median number of days it took to recuperate from all types of injuries and illnesses occurring on the job was 4 for youths and 5 for all workers. This, however, should not be construed to mean that injuries to youths are less severe than those to adults. Because youths work primarily part time, the recuperation time for youths conceivably includes nonscheduled work time and thus would not be included in counts of days away from work.

By industry. About four-fifths of the nonfatal injuries and illnesses among workers under the age of 18 occurred in establishments engaged in retail trade or services—a ratio similar to the proportion of these young workers employed in the two industries. (See table 5.)

Table 5. Nonfatal injuries and illnesses with days away from work among private sector wage and salary workers, by industry, 1996

Industry	Young workers (under age 18)		All workers	
	Number	Percent	Number	Percent
Total[1]	15,156	100	1,880,525	100
Agriculture, forestry, and fishing[1]	380	3	38,256	2
Mining	—	—	15,091	1
Construction	447	3	182,334	10
Manufacturing	878	6	462,239	25
Transportation and public utilities	448	3	224,030	12
Wholesale trade	403	3	144,698	8
Retail trade	9,316	62	322,046	17
Finance, insurance, and real estate	94	1	42,784	2
Services	3,186	21	449,047	24

[1] Workers on farms with fewer than 11 employees are excluded.

NOTE: Data may not sum to totals because of rounding and the omission of nonpublishable estimates. Dashes indicate nonpublishable data or percent less than 0.5.

SOURCE: Survey of Occupational Injuries and Illnesses.

Retail trade. The retail trade industry accounted for about three-fifths of the serious nonfatal injuries and illnesses occurring among the youth workforce. The following tabulation shows the distribution of these incidents among individual retail industries:

	Percent
Restaurants	52
Grocery stores	24
Department stores	11
Other	13

About half the injuries in retail trade occurred in the restaurant industry, a major employer of young workers. Common hazards include slippery floors, hot grills, sharp knives, and splattered grease and other hot liquids.[19] As a result, youths most often suffered cuts, burns, sprains and strains, and bruises. When compared with their adult counterparts, teenage cooks and kitchen helpers were more likely to suffer heat burns and less likely to suffer sprains and strains.[20]

Grocery stores accounted for about a fourth of nonfatal injuries among youths working in retail trade. Sprains and strains are common, typically resulting from workers lifting or moving inventory, lifting customer bags, or pushing strings of shopping carts from parking lots. Lacerations resulting from opening cartons with sharp cutting tools were another common injury among youths employed in the industry.[21]

Services. About a fifth of the lost-workday injuries among youths occurred in the services industry. The following tabulation shows the distribution of injuries and illnesses among the service industries:

	Percent
Health services	27
Amusement and recreation services	24
Business services	15
Social services	10
Other	24

About a fourth of the serious nonfatal injuries occurred in health services, where injuries typically involve sprains and strains incurred while lifting or otherwise assisting patients in hospitals and nursing homes.[22] Another fourth occurred in amusement and recreation services—in this case usually resulting from falls, being struck by falling or flying objects, or lifting heavy objects.

ENCOURAGING THE NATION'S YOUTHS TO WORK has been and continues to be a highly regarded method for teaching young persons responsibility and other values. Through work they often learn the value of saving for costly items such as automobiles or college tuition. Work experience is widely extolled as a virtue in itself. Despite the relatively low frequency, however, youth fatalities and other serious injuries tend to have a greater emotional impact on society, and concerns for their safety will continue to be an important consideration.

Notes

[1] Data on fatal work injuries are from the Bureau of Labor Statistics' Census of Fatal Occupational Injuries (CFOI). CFOI data cover all fatal work injuries. This program, which has collected occupational fatality data nationwide since 1992, uses diverse data sources to identify, verify, and profile fatal work injuries. Information about each workplace fatality (industry and other worker characteristics, equipment involved, and circumstances of the event) is obtained by cross-referencing source documents such as death certificates, workers' compensation records, and reports to Federal and State agencies. This method assures counts are as complete and accurate as possible.

[2] The information in this section was drawn primarily from the following two sources: Laura Greene, *Child Labor: Then and Now* (New York, Franklin Watts, 1992) and Richard Wormser, *American Childhoods: 3 Centuries of Youth at Risk* (New York, Walker and Co., 1996).

[3] Wormser, *American Childhoods*, p. 57.

[4] Greene, *Child Labor*, p. 19.

[5] See the report of the National Research Council, *Protecting Youth at Work* (Washington, DC, National Academy Press, 1998).

[6] Fatality rates are used to compare the risk of incurring a fatal work injury among worker groups with varying employment or exposure levels. There is more than one method to calculate a fatality rate. An hours-based rate measures the risk of fatality per standardized length of exposure; an employment-based rate measures the risk for those employed during a given period of time, regardless of exposure hours. Hours-based measurements are especially useful for comparing worker groups with varying exposure hours, such as when a large proportion of workers in an industry work part-time.

Fatal work injury rates included in this article were calculated using annual average employment and hours worked that were collected in the Current Population Survey (CPS). There rates are considered experimental measures. They provide the number of fatal work injuries per 100,000 workers for 1992–97. Employment-based rates were calculated as follows:

$$[(N\,92 + N\,93 + N\,94 + N\,95 + N\,96 + N\,97)/(W\,92 + W\,93 + W\,94 + W\,95 + W\,96 + W\,97)] \times 100{,}000$$

where,

N = number of civilian worker fatalities, age 15 and older, 1992–97, and

W = annual average number of employed civilians, age 15 and older, 1992–97.

For calculating rates using hours worked, the total hours worked was converted to full-time equivalent workers using a 2,000 hours work year. Thus the rate of fatalities per 100,000 full-time equivalent workers = (fatalities/hours) x 200,000,000.

Because the Census of Fatal Occupational Injuries program does not collect employment or hours of exposure data, annual average estimates from the CPS for 1992–97 are used in the denominator. The CPS employment and hours data used to calculate rates are estimates based upon a sample of persons employed rather than a complete count. Therefore, the CPS estimates and fatality rates have sampling errors; that is, they may differ from figures that would have been obtained if it had been possible to take a complete census of employed persons. See "Explanatory Notes and Estimates of Error" in the January 1997 *Employment and Earnings* for an explanation of CPS sampling and estimation methodology, and standard error computations. The relative standard errors of the CPS estimates can be used to approximate confidence ranges for the fatality rates.

[7] See John W. Ruser, "Denominator Choice in the Calculation of Workplace Fatality Rates," in *Fatal Workplace Injuries in 1996: A Collection of Data and Analysis*, Report 922 (Bureau of Labor Statistics, June 1998).

[8] The relative standard errors of the CPS estimates can be used to approximate confidence ranges for the fatality rates. For example, the confidence factor for hours-based fatality rates for 15-year-olds from 1992 to 1997 can be estimated as follows: 5.1 x 0.022 x 1.6 = 0.2, where 5.1 = the rate per 100,000 full-time equivalent workers, 0.022 = the relative standard error, and 1.6 = the factor for a 90-percent confidence level. The confidence range for this rate is 4.9 to 5.3 (5.1 plus or minus 0.2). The confidence ranges were estimated for the remaining age groups for the 1992–97 period—both for employment- and hours-based fatality rates. All of these ranges were the rate plus or minus 0.1.

[9] Most States require drivers to be at least 16 years old for a general license and 18 for a commercial license. In addition, the Fair Labor Standards Act currently prohibits youths from driving at work except on an occasional basis. See "Facts, State Laws 1998" published by the Insurance Institute for Highway Safety; and the National Research Council's report, *Protecting Youth at Work*, p. 171, for additional information on driving regulations pertaining to youths.

[10] Youths under 16 years of age are prohibited from operating tractors larger than 20 horsepower unless working on a farm owned or operated by the youth's parents. See National Research Council, *Protecting Youth at Work*.

[11] As of September, 1998, all but six States had a minimum age of 16 to drive without an adult in the vehicle. See "Facts, State Laws 1998" published by the Insurance Institute for Highway Safety. Some States do allow farm tractors to be driven limited distances on public roadways without a drivers license.

[12] See National Research Council, *Protecting Youth at Work*, for various discussions of the appropriateness of youths operating machinery. The report cites an unpublished study conducted by the Consumer Product Safety Commission that found that operators of ride-on mowers that were young, short, or light-weight were more likely than others to be injured.

[13] See, for example, "Signs of Safety in Agriculture: A Report on National Agricultural Safety Programs," (U. S. Department of Agriculture), p. 5.

[14] National Research Council, *Protecting Youth at Work*, p. 157.

[15] *Ibid.*, p. 46.

[16] News carriers are sometimes considered independent contractors. See National Research Council, *Protecting Youth at Work*, p. 18.

[17] Newspaper carriers are mentioned both here and in the section on retail trade because they are typically employed either in newspaper printing and publishing, and industry in the manufacturing division, or in direct selling establishments in the retail trade industry. See the *Standard Industrial Classification (SIC) Manual*, 1987. There were a total of 11 fatalities among newscarriers under age 18 during the study period.

[18] Data on nonfatal injuries are from the BLS Survey of Occupational Injuries and Illnesses. This survey collects information from a random sample of about 200,000 establishments representing most private industry wage and salary workers. Private household workers and workers on small farms are excluded from survey coverage. Worker and case characteristics are collected only for those workers sustaining injuries and illnesses that require days away from work to recuperate. Because the scope and methodology of the Census of Fatal Occupational Injuries and the Survey of Occupational Injuries and Illnesses are slightly different, comparisons of fatal and nonfatal data are problematic. Additional information can be obtained via e-mail (cfoistaff@bls.gov or oshstaff@bls.gov) or from the following Internet address: *http://stats.bls.gov/oshhome.htm*

[19] National Research Council, *Protecting Youth at Work*, p. 73.

[20] See Martin E. Personick, "Profiles in safety and health: eating and drinking places," *Monthly Labor Review*, June 1991, pp. 19–26.

[21] National Research Council, *Protecting Youth at Work*, p. 73.

[22] *Ibid.*

The changing composition of lost-workday injuries

Restricted-activity days are becoming a more common aspect of occupational injury and illness cases at the same time that days away from work are becoming shorter and less frequent; increased job safety and the faster return to work of injured workers may account for this development

John W. Ruser

Occupational injury and illness rates have changed notably in recent years. The overall rate has declined every year since 1992, from 8.9 cases per 100 workers in that year to 7.1 in 1997. The latter rate is the lowest since the Bureau of Labor Statistics began reporting this information in the early 1970s. Further, the composition of workplace injuries and illnesses has changed dramatically in the past decade. Cases with lost work time are now less likely to involve days away from work and more likely to involve only restricted work activity. Even when injured or ill workers do take time off work to recuperate, they are now more likely to return to work sooner, but unable to perform all job duties. Restricted work activity due to workplace injury or illness is a growing phenomenon in the U.S. workplace, indicative both of a possible decrease in the severity of reported cases and of a trend toward the faster return to work of affected workers. To varying extents, the latter trend appears in all industrial sectors, in different-sized establishments, and for all kinds of injuries and illnesses. This article presents evidence of this important compositional change in occupational injuries and illnesses.

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Trends from 1976 to 1997

Since 1972, the Bureau of Labor Statistics has collected occupational injury and illness data on an annual basis from logs that employers maintain according to Occupational Safety and Health Administration (OSHA) guidelines. Private-industry establishments surveyed by the Bureau are asked to report the numbers of injuries and illnesses of various types that occurred in the previous year, along with an estimate of the number of hours worked by all employees in that year. The Bureau then calculates rates of injuries and illnesses by industry and establishment size, usually expressed as the number of cases per 100 or 10,000 full-time equivalent workers.

Workplace injury and illness cases are divided between those that do and those that do not involve lost work time after the day an injury or illness is sustained. Lost-workday cases include both those with days away from work and those with days with restricted work activity only. When an injured or ill worker took no time away from work (except possibly on the day of the injury), but could not perform all normal job tasks for some period of time, the case is labeled a restricted-activity-only case. In contrast, days-away-from-work cases involve some time off work (not counting the day of the injury) and may also include some days of restricted work activity.

In the early years of the BLS survey, cases with only restricted activity accounted for a small per-

centage of all lost-workday cases. However, over the past decade, BLS data show that the rate of cases with only restricted activity has risen, while the rate for days-away-from-work cases has generally fallen. (See chart 1 and table 1.) From 1978 to 1986, the annual rate in private industry for cases with only restricted work activity remained constant at 0.3 per 100 full-time equivalent workers. Since 1986, the rate has risen steadily to 1.2 cases per 100 workers in 1997, a fourfold increase over the 1986 rate. In contrast, the rate for days-away-from-work cases dropped from 3.3 in 1986 and 3.5 in 1988 to 2.1 in 1997. Because the rate for days-away-from-work cases declined slightly more than the rate for restricted-activity cases rose, the overall lost-workday-case rate declined slightly between 1986 and 1997, from 3.6 to 3.3.

With the possible exception of finance, insurance, and real estate, every major industry division shows the same pattern of a rise in the restricted-activity-case rate and a drop in the days-away-from-work-case rate over the period from the mid-1980s to 1997. (See table 1.) The most notable compositional change has occurred in manufacturing. In 1986, that industry's rate of restricted-activity cases was 0.7 per 100 workers, while the rate for days-away-from-work cases was 4.0. By 1997, the rates for both restricted-activity and days-away-from-work cases were identical at 2.4 per 100 workers. Thus, in manufacturing, while there were 5.75 times more days-away-from-work cases than there were restricted-activity cases in 1986, roughly the same number of each type of case occurred in 1997. None of the other industry divisions displayed such a convergence in the relative proportions of cases.

Table 2 further explores the relationship between the industry studied and the change in the rate of restricted-activity cases. Shown are the 15 two-digit SIC industries with the largest changes in restricted-activity-case rates between 1986 and 1997, ranked by the size of the change (not the rate of change). Consistent with the previous table, the top 8 industries and 12 of the 15 entries listed are in manufacturing.[1] Food and kindred products (SIC 20) tops the list, with a rise in the restricted-activity-case rate of 3.7 per 100 workers. Next is transportation equipment manufacturing, with a rise of 3.0 cases. The table also shows that the rate for days-away-from-work cases declined for all of the industries listed, often with drops in excess of the rises in restricted-activity-case rates.

The size of the establishment (that is, the number of employees in it) is strongly related to the propensity for an employer to report restricted-activity cases. In both 1986 and 1997, larger employers were more likely to report these cases. (See table 3.) While establishments with 1 to 10 employees reported only two-tenths of a restricted-activity case per 100

Chart 1. National trends in rates associated with lost workdays (rates per 100 full-time equivalent workers), private industry, 1976–97

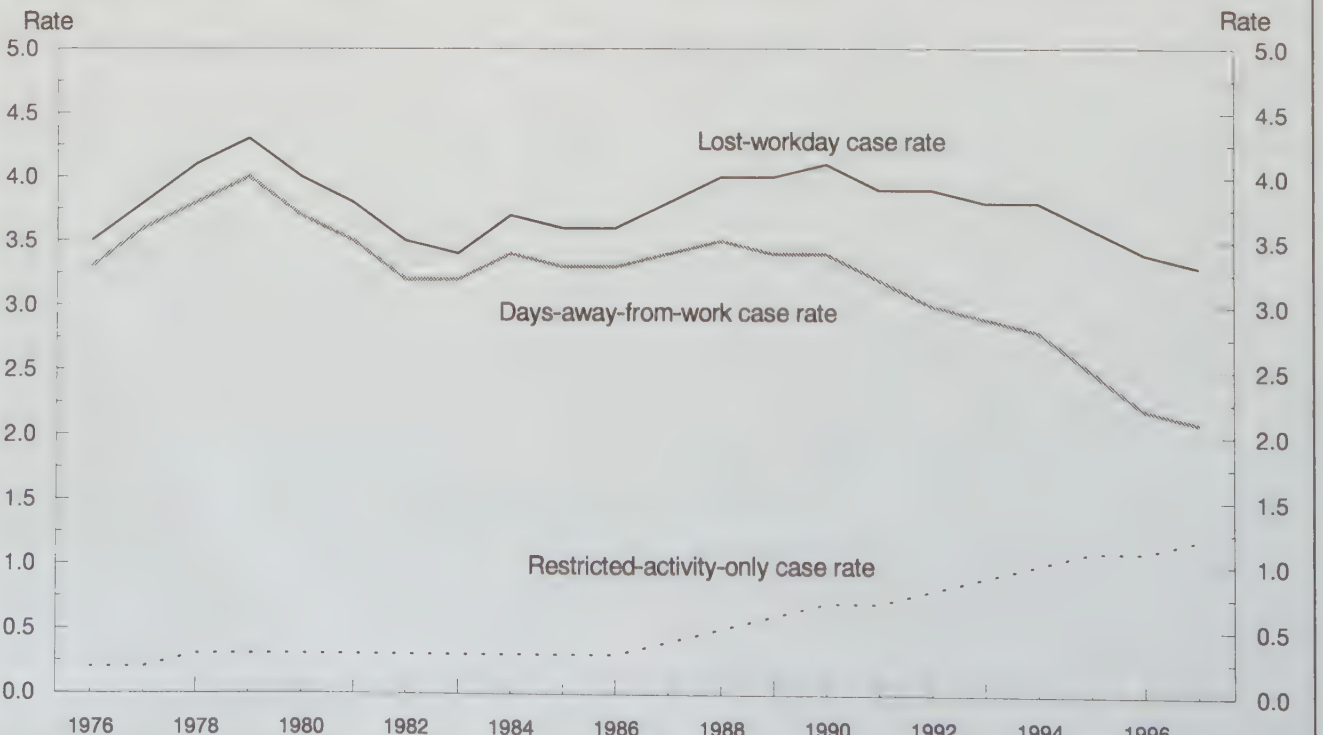

Table 1. Incidence[1] of occupational injury and illness cases involving days away from work and occupational injury and illness cases involving restricted work activity only, by industry division, private industry, 1976–97

Year[2]	Private industry		Agriculture, forestry, and fishing		Mining		Construction		Manufacturing		Transportation and public utilities[3]		Wholesale and retail trade		Finance, insurance, and real estate		Services	
	Cases with days away from work	Cases with restricted work activity only	Cases with days away from work	Cases with restricted work activity only	Cases with days away from work	Cases with restricted work activity only	Cases with days away from work	Cases with restricted work activity only	Cases with days away from work	Cases with restricted work activity only	Cases with days away from work	Cases with restricted work activity only	Cases with days away from work	Cases with restricted work activity only	Cases with days away from work	Cases with restricted work activity only	Cases with days away from work	Cases with restricted work activity only
1976	3.3	0.2	4.6	0.1	5.6	0.2	5.4	0.1	4.4	0.4	4.6	0.4	2.8	0.0	0.7	0.0	2.0	0.0
1977	3.6	.2	5.0	.1	5.7	.2	5.8	.1	4.7	.4	4.9	.4	2.9	.1	.8	.0	2.2	.0
1978[4]	3.8	.3	5.3	.1	6.1	.4	6.3	.2	5.0	.5	5.3	.4	3.0	.1	.8	.0	2.3	.1
1979[4]	4.0	.3	5.5	.2	6.4	.4	6.6	.2	5.2	.6	5.4	.5	3.2	.2	.9	.0	2.4	.1
1980	3.7	.3	5.6	.2	6.2	.3	6.3	.2	4.8	.6	5.1	.5	3.1	.2	.8	.0	2.2	.1
1981	3.5	.3	5.7	.2	5.9	.3	6.1	.3	4.5	.6	4.8	.5	3.0	.1	.8	.0	2.3	.1
1982	3.2	.3	5.6	.3	5.2	.2	5.8	.2	3.9	.5	4.4	.5	2.9	.2	.8	.0	2.2	.1
1983[4]	3.2	.3	5.9	.2	4.2	.2	6.1	.2	3.8	.5	4.2	.5	2.9	.2	.8	.0	2.3	.1
1984[4]	3.4	.3	5.8	.3	5.2	.2	6.6	.3	4.1	.6	4.6	.5	3.1	.2	.8	.1	2.4	.1
1985	3.3	.3	5.4	.3	4.5	.3	6.5	.3	4.0	.6	4.5	.5	3.0	.2	.8	.0	2.4	.1
1986	3.3	.3	5.3	.3	3.9	.3	6.6	.3	4.0	.7	4.4	.4	3.1	.2	.8	.1	2.4	.2
1987	3.4	.4	5.3	.4	4.5	.3	6.4	.3	4.2	1.0	4.4	.5	3.2	.2	.8	.1	2.5	.2
1988	3.5	.5	5.3	.4	4.7	.4	6.5	.4	4.5	1.3	4.6	.5	3.2	.3	.9	.1	2.4	.2
1989	3.4	.6	5.2	.5	4.4	.5	6.3	.4	4.4	1.4	4.7	.6	3.2	.3	.8	.1	2.4	.2
1990	3.4	.7	5.4	.5	4.5	.5	6.2	.5	4.2	1.6	4.7	.8	3.1	.4	1.0	.1	2.5	.3
1991	3.2	.7	4.8	.6	4.0	.5	5.6	.5	3.9	1.7	4.6	.9	3.0	.4	1.0	.1	2.5	.3
1992	3.0	.8	4.7	.7	3.6	.5	5.3	.5	3.5	1.9	4.2	.9	2.9	.5	1.0	.2	2.5	.4
1993	2.9	.9	4.2	.8	3.3	.6	4.9	.6	3.3	2.0	4.3	1.1	2.8	.7	1.0	.2	2.3	.5
1994	2.8	1.0	3.9	.9	3.3	.6	4.9	.6	3.2	2.3	4.2	1.2	2.7	.7	.9	.2	2.2	.6
1995	2.5	1.1	3.4	.9	3.3	.6	4.2	.7	2.9	2.4	3.9	1.3	2.4	.8	.8	.2	2.0	.8
1996	2.2	1.1	3.0	1.0	2.5	.8	3.7	.8	2.5	2.4	3.8	1.3	2.1	.8	.7	.2	1.8	.7
1997	2.1	1.2	3.0	1.1	2.9	.8	3.6	.8	2.4	2.4	3.7	1.2	2.0	1.0	.7	.2	1.7	.8
Percent change, 1976–97	–36	500	–35	1,000	–48	300	–33	700	–45	500	–20	200	–29	[5]	0	[5]	–15	[5]
Percent change, 1988–97	–40	140	–43	175	–38	100	–45	100	–47	85	–20	140	–38	233	–22	100	-29	300

[1] Rates represent the number of injuries and illnesses per 100 full-time equivalent workers and were calculated as (N/EH) x 200,000, where

N = number of injuries and illnesses
EH = total hours worked by all employees during the calendar year
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

[2] Data for 1976–78 are based on the 1972 edition of the *Standard Industrial Classification* [SIC] *Manual*; data for 1979–87 are based on the 1972 edition of the SIC *Manual* and the 1977 supplement thereto; and data for 1988–97 are based on the 1987 edition of the SIC *Manual*.

[3] In 1996, air courier operations previously classified in industry groups 421, 422, 423, 452, 473, and 478 were reclassified into industry group 451. As a result, the 1996 and 1997 estimates for these SIC's and major industry groups 42, 45, and 47 are not comparable to those for previous years. In addition, the 1996 and 1997 estimates for transportation and public utilities may have more variability than those for previous years.

[4] To maintain comparability with the rest of the series, data for small nonfarm employers in low-risk industries who were not surveyed were imputed and included in the survey estimates.

[5] Not applicable where base is 0.0.

workers in 1997, the rate for establishments with 250 to 999 employees was 10 times that number, at 2 cases per 100 workers. In contrast to restricted-activity cases, the establishment size profile for the rate for days-away-from-work cases has been described as an inverted *U*. Medium-sized establishments (50 to 249 employees) report higher rates of days-away-from-work cases than do small and large establishments. However, between 1986 and 1997, the days-away-from-work-case rate declined less at the upper end of the size distribution than in the 50–249 size class. Thus, there is now a more modest decline in the days-away-from-work-case rate as the establishment size increases.

Between 1986 and 1997, the larger classes of establishment experienced the greatest increases in rates of restricted-

Table 2. Fifteen two-digit SIC industries with the largest increases in restricted-activity-case rates, 1986–97 (rates per 100 full-time equivalent workers)

Industry	SIC code	Restricted-activity-case rate			Days-away-from-work-case rate		
		1986	1997	Change	1986	1997	Change
Food and kindred products	20	1.1	4.8	3.7	6.9	3.2	–3.7
Transportation equipment	37	.8	3.8	3.0	3.4	2.8	–.6
Primary metal industries	33	.9	3.5	2.6	5.2	3.7	–1.5
Furniture and fixtures	25	.9	3.0	2.1	5.3	2.8	–2.5
Rubber and miscellaneous products	30	1.0	3.1	2.1	5.6	2.7	–2.9
Fabricated metal products	34	.9	2.8	1.9	5.9	3.6	–2.3
Lumber and wood products	24	.7	2.6	1.9	9.0	3.9	–5.1
Stone, clay, and glass products	32	.7	2.5	1.8	5.8	3.3	–2.5
General merchandise stores	53	.3	2.0	1.7	3.9	2.6	–1.3
Building materials and garden supplies	52	.3	1.8	1.5	4.3	3.0	–1.3
Miscellaneous manufacturing industries	39	.5	2.0	1.5	3.8	2.2	–1.6
Textile mill products	22	.6	2.1	1.5	2.4	1.0	–1.4
Leather and leather products	31	.6	2.1	1.5	4.2	2.2	–2.0
Apparel and other textile products	23	.2	1.6	1.4	2.5	1.5	–1.0
Hotels and other lodging places	70	.3	1.5	1.2	4.0	2.3	–1.7

NOTE: Table excludes SIC 45, whose rate change may have been influenced by the reclassification of air courier operations in 1996.

work-activity-only cases. The rate rose most in establishments with 250 to 999 employees, an increase of 1.5 cases per 100 full-time equivalent workers, followed closely by establishments with 1,000 or more employees, whose rate increased by 1.4 cases. More-than-offsetting declines in rates of days-away-from-work cases occurred in establishments with 50 to 249 employees and those with 250 to 999 employees, so that the rates of lost-workday cases for these categories decreased.

With the rate of restricted-activity cases rising in all sectors of the economy—particularly in manufacturing and in larger establishments—the question that comes to mind is whether these trends are related, because manufacturing establishments tend to be larger than those in other industries. This turns out not to be the case; an examination of the establishment size data by major industry division (not presented herein) shows that, within many of the industry divisions, the increases in the restricted-activity-case rates were greater in larger establishments (though not necessarily the largest in the largest size class). That is, accounting crudely for industry composition does not eliminate the differential rise in restricted-activity-case rates across establishments of different size.

Case and demographic data, 1992–96

The injury and illness data that the Bureau has collected since 1972 provide considerable detail along the dimensions of industry and establishment size. However, the data do not tell us anything about the nature of the injury and illness cases or about the workers who experience occupational injuries or illnesses. To address the demand for this information, since 1992 the Bureau has collected a substantial body of additional information, termed "case and demographic data," on injury and illness cases involving days away from work. Because no such data are collected for cases that involve only restricted work activity, there is no additional information about these increasingly numerous cases.

The case and demographic data on days-away-from-work cases do contain interesting information about the increasing use of restricted workdays. As mentioned previously, cases involving days away from work may also involve some days of restricted work activity. While the latter are not routinely tabulated, the BLS survey does maintain a count of the number of restricted-activity days for each sampled days-away-from-work case.

Even over the relatively brief period from 1992 to 1996, the survey reveals a slight shortening in the duration of days away from work, and a growing use of restricted-activity days, in cases that have days away from work. While the median number of days away from work was 6 in 1992 and 1993, it fell to 5 in later years. Further, the distribution of days-away-from-work cases has shifted toward those with shorter duration. (See table 4.) In 1992, 15.7 percent of days-away-from-work cases lasted only 1 day. The percentage increased to 16.9 percent in 1995, before dropping slightly to 16.7 percent in 1996. In contrast, 19.7 percent of days-away-from-work cases lasted 31 or more days in 1992, a percentage that dropped to 17.9 percent in 1995 before rising to 18.5 percent in 1996. The percentages of cases of intermediate duration showed little change over the period, perhaps reflecting the fact that some cases that previously were of longer duration moved into the intermediate-duration categories, while some cases moved into shorter duration categories.

The decline in the number of days away from work and the shifting duration distributions are relatively modest. More striking is the growing fraction of days-away-from-work

cases that are accompanied by restricted-activity days. In 1992, 16.8 percent of days-away-from-work cases also had some number of restricted-activity days. (See table 5.) By 1996, the percentage had risen to 25.8, an increase of more than 50 percent. As the table shows, restricted-activity days became more prevalent in all categories of duration, with no obvious relationship between the increase and the duration. The largest increase in the prevalence of restricted activity (10.9 percentage points) occurred for cases lasting 6 to 10 days away from work, while the smallest increase (7.3 percentage points) occurred for the most severe category of cases, 31 or more days away from work.

The use of restricted-activity days in conjunction with days away from work grew in all industrial sectors from 1992 through 1996, although the amount of increase varied. (See table 6.) Consistent with the fact that manufacturing had the highest rate of cases of restricted activity only, establishments in manufacturing were most likely to report days-away-from-work cases accompanied by restricted-activity days. However, mining, rather than manufacturing, showed the largest increase in the percentage of days-away-from-work cases with positive restricted activity days (10.4 percentage points), while construction showed the largest rate of growth (78 percent). At the other end of the spectrum, the finance, insurance, and real estate sector had the smallest increase.

In a similar manner, consistent with the fact that larger establishments had higher rates of restricted-work-activity-only cases than did smaller establishments, larger establishments were more likely to report restricted-activity days accompanying days-away-from-work cases. (See table 7.) In 1996, 21.9 percent of days-away-from-work cases were accompanied by restricted-activity days in establishments with 11 to 49 employees. The percentage increased with the size of the establishment, to 32.3 percent in establishments with 1,000 or more employees. Interestingly, the smallest establishments (1–10 employees) were more likely to report restricted-activity days than were establishments in the next largest size class.

In general, between 1992 and 1996, larger establishments also experienced faster increases in the percentage of days-away-from-work cases accompanied by restricted-activity days. Measured by either change in percent or rate of change, establishments with 250 to 999 employees experienced the fastest growth, while those with 1 to 10 employees had the slowest growth. However, restricted-activity days did not grow as much in the largest establishments (1,000 or more employees) as in those with 250 to 999 employees.

For days-away-from-work cases, the case and demographic data collected since 1992 shed more light on the types of injuries and illnesses that have declined. Unfortunately, because no such data are collected for restricted-activity-only cases, it is not possible to identify the types of injuries and illnesses that are growing fastest in that category.

Table 8 reports the rates of days-away-from-work cases for eight kinds of injury or illness with the highest rates in 1992. These annual rates are expressed in terms of cases per 10,000 full-time equivalent workers. The table shows that rates declined for all eight kinds of injury and illness listed. The rate for the dominant category, sprains and strains, fell from 133.7 in 1992 to 97.6 in 1996, or 27 percent. In terms of percent change of the rate, dislocations declined the most, while carpal tunnel syndrome declined the least.

Whereas the rate of days-away-from-work cases dropped for all eight injury and illness categories listed in the table, the percentage of those cases with restricted-activity days increased in all eight categories. (See table 9.) At both the beginning and end of the period, persons taking days away from work because of carpal tunnel syndrome were most likely to include some days with restricted work activity. For this kind of injury, the fraction of days-away-from-work cases with restricted-activity days increased 16.3 percentage points, from 30.6 percent to 46.9 percent, the largest percentage-point increase shown in the table. However, the three injury and illness categories with the lowest incidences of restricted-activity days in 1992 (heat burns and scalds, punctures, and bruises and contusions) showed the highest rates of growth of restricted-activity days up to 1996.

Table 3. Change in occupational injury and illness rates, by size of establishment, 1986–97 (rate per 100 full-time equivalent workers)

Number of employees	Lost-workday-case rate			Days-away-from-work-case rate			Restricted-work-case rate		
	1986	1997	Change	1986	1997	Change	1986	1997	Change
All establishments	3.6	3.3	–0.3	3.3	2.1	–1.2	0.3	1.2	0.9
1–10	1.5	1.3	–.2	1.4	1.1	–.3	.1	.2	.1
11–49	2.0	2.5	.5	1.9	2.0	.1	.1	.5	.4
50–249	4.7	4.0	–.7	4.4	2.6	–1.8	.3	1.4	1.1
250–999	4.5	4.3	–.2	3.9	2.3	–1.6	.5	2.0	1.5
1,000 or more	3.3	4.0	.7	2.7	2.0	–.7	.5	1.9	1.4

Table 4. Distribution of days-away-from-work cases, by number of days away from work, 1992–96

Number of days away from work	Percentage					Change, 1992–96
	1992	1993	1994	1995	1996	
Total	100.0	100.0	100.0	100.0	100.0	..
1	15.7	16.3	16.3	16.9	16.7	1.0
2	12.9	13.0	12.9	13.4	13.1	.2
3–5	20.4	20.7	21.0	20.9	20.6	.2
6–10	13.6	13.4	13.3	13.4	13.2	–.4
11–20	11.4	11.4	11.2	11.3	11.7	.3
21–30	6.4	6.3	6.4	6.2	6.2	–.2
31 or more	19.7	19.0	18.9	17.9	18.5	–1.2

Table 5. Percentage of days-away-from-work cases with reported days of restricted work activity, by number of days away from work, 1992–96

Number of days away from work	Percentage					Change, 1992–96	Rate of change (percent), 1992–96
	1992	1993	1994	1995	1996		
Total	16.8	19.1	21.1	23.8	25.8	9.0	53.6
1	15.4	17.3	19.3	22.2	23.5	8.1	52.6
2	14.9	17.3	19.5	22.2	24.2	9.3	62.4
3–5	16.0	17.8	20.1	23.2	25.1	9.1	56.9
6–10	16.7	19.3	21.5	24.5	27.6	10.9	65.3
11–20	18.8	21.8	23.5	25.7	28.8	10.0	53.2
21–30	18.9	22.1	25.2	26.8	29.7	10.8	57.1
31 or more	18.1	20.3	21.7	24.2	25.4	7.3	40.3

Possible contributing factors

What accounts for the trend toward restricted-activity workdays that is observed in the data? Little rigorous empirical evidence addresses this issue, but some factors may play a role.[2] First, in the mid-1980s, OSHA imposed sizable fines on certain large manufacturing companies for recordkeeping violations.[3] Among the industries affected were chemicals, food and kindred products, and automotive products. Large establishments in these industries reported increases in days-away-from-work and restricted-activity cases during the period following the fines. Thus, some of the increase in restricted-work-activity-only cases may have arisen out of increased recognition that these cases are required to be reported.

However, the rise in restricted-activity cases has continued long past the time of these large fines, so other causes must be sought. An important development in the 1980s was a rapid rise in the costs of workers' compensation insurance for workplace injuries and illnesses. Many State legislatures, which are responsible for the laws governing workers' compensation, reacted to this development by passing a variety of legislative measures designed to control the cost increase. Some of these measures--mandatory employer safety and health programs, premium discounts for high-quality programs of that nature, and medical deductibles payable by the employer, for example—might have resulted in employers paying more attention to workplace safety.[4] At the same time, rising workers' compensation costs themselves may have altered employers' views about the cost of safety, leading them to view safety as a controllable, rather than an uncontrollable, cost. These two factors may have led employers to invest more in safety, reducing both the frequency and severity of injuries. The decline in overall rates and the shifting of injuries away from days away from work and toward restricted-activity days would be consistent with this hypothesis.

State laws might also be responsible for the more rapid return to work of injured workers. Legislative changes in many States now permit the use of managed health care, which might lead to greater scrutiny of individuals' health-related claims. Some States even have passed "return-to-work" legislation. These laws differ by State, but include features such as financial incentives to employers for encouraging workers to return early to work, punishment of employers for failing to allow

Table 6. Percentage of days-away-from-work cases with reported days of restricted work activity, by major industry group, 1992–96

Industry	Percentage					Change, 1992–96	Rate of change (percent), 1992–96
	1992	1993	1994	1995	1996		
Agriculture, forestry, and fishing	14.0	16.4	18.1	21.5	23.7	9.7	69.3
Mining	21.3	21.5	23.5	22.2	31.7	10.4	48.8
Construction	10.5	12.7	13.7	16.3	18.7	8.2	78.1
Manufacturing	22.5	24.5	26.9	29.4	32.3	9.8	43.6
Transportation and public utilities	13.0	16.0	16.0	20.1	20.5	7.5	57.7
Trade	15.2	17.7	20.8	22.2	25.3	10.1	66.4
Finance, insurance, and real estate	15.9	18.4	20.4	21.0	21.3	5.4	34.0
Services	16.4	18.6	20.5	24.3	25.6	9.2	56.1

Table 7. Percentage of days-away-from-work cases with reported days of restricted work activity, by size of establishment, 1992–96

Number of employees in establishment	Percentage					Change, 1992–96	Rate of change (percent), 1992–96
	1992	1993	1994	1995	1996		
All sizes	16.8	19.1	21.1	23.8	25.8	9.0	53.6
1–10	17.6	19.1	19.2	19.6	24.4	6.8	38.6
11–49	14.8	16.8	18.1	21.2	21.9	7.1	48.0
50–249	14.9	17.5	20.0	22.2	24.1	9.2	61.7
250–999	18.2	21.1	23.9	26.9	30.4	12.2	67.0
1,000 or more	22.3	24.7	26.7	30.7	32.3	10.0	44.8

Table 8. Incidence of days-away-from-work cases, by nature of injury or illness, 1992–96

Nature of injury or illness	Rate per 10,000 full-time equivalent workers					Change, 1992–96	Rate of change (percent), 1992–96
	1992	1993	1994	1995	1996		
Sprains and strains	133.7	121.6	119.3	107.5	97.6	–36.1	–27.0
Bruises and contusions	29.1	26.8	26.2	23.6	20.8	–8.3	–28.5
Cuts and lacerations	22.7	21.5	20.4	18.8	15.8	–6.9	–30.4
Fractures	18.8	17.3	17.2	15.3	14.3	–4.5	–23.9
Heat burns and scalds	5.4	4.8	4.6	4.4	3.5	–1.9	–35.2
Carpal tunnel syndrome	4.3	5.2	4.8	3.9	3.6	–.7	–16.3
Dislocations	4.3	4.0	3.5	2.6	2.3	–2.0	–46.5
Punctures	4.1	4.1	3.2	3.0	2.8	–1.3	–31.7

injured employees back to work, and punishment of employees for refusing appropriate work. One article mentions a rapid rise in the growth of firms that provide advice to employers on job modifications that enable injured workers to return to work earlier.[5]

One example of an apparently successful return-to-work effort is Oregon's Employer-at-Injury Program. Started in 1993, this program provides incentives to employers to bring injured workers back to work earlier and to put them on "light-duty" jobs within the limitations of their injury or illness. The incentives include wage subsidies (50 percent of wages up to 3 months), reimbursements of up to $2,500 for modifications to the workplace to accommodate injured workers, $1,000 for tools and equipment required for the job, and $400 for work-related clothing. As of 1997, 16 percent of all disabling claims (cases involving more than 3 days away from work) and 6 percent of nondisabling claims availed themselves of the program. Nearly 95 percent of program costs were for wage subsidies.[6] An Oregon researcher has hypothesized that the Employer-at-Injury Program may have helped reduce the number of injuries that are classified as disabling (moving them into the nondisabling category) and may be partly responsible for the decline in the rate of disabling claims that has been observed in Oregon in recent years.[7]

Only time will tell whether restricted-work-activity cases will continue to increase in prevalence among workplace injuries and illnesses. However, it is clear from the BLS data that over the past decade these cases have already risen to prominence and merit increased attention and research. □

Table 9. Percentage of days-away-from-work cases with reported days of restricted work activity , by nature of injury or illness, 1992–96

Nature of injury or illness	Percentage					Change, 1992–96	Rate of change (percent), 1992–96
	1992	1993	1994	1995	1996		
Sprains and strains	19.1	21.7	24.1	27.2	29.0	9.9	51.8
Bruises and contusions	11.9	14.0	15.4	18.2	20.2	8.3	69.7
Cuts and lacerations	13.1	14.4	17.2	18.3	21.9	8.8	67.2
Fractures	19.4	22.3	25.2	28.6	28.3	8.9	45.9
Heat burns and scalds	10.5	10.1	13.6	13.8	18.9	8.4	80.0
Carpal tunnel syndrome	30.6	31.9	35.1	38.2	46.9	16.3	53.3
Dislocations	22.3	29.5	25.1	26.0	29.8	7.5	33.6
Punctures	9.7	11.4	11.8	14.4	16.5	6.8	70.1

Notes

ACKNOWLEDGMENT: I am indebted to Janice Devine and William Weber for helpful comments and to Tim Webster for providing table 1.

[1] SIC 45 was excluded from the table because the change in its restricted-activity case rate may have been influenced by the reclassification of air courier operations. (See footnote 4 of table 1.)

[2] One rigorous study finds that employers are more likely to present workers with the option of using restricted-activity days in States where workers' compensation income benefits are more generous. (See Geetha M. Waehrer and Ted Miller, *Restricted Work, Workers' Compensation and Days Away from Work*, mimeograph, December 1998.

[3] *Twenty Years of OSHA Federal Employment Data* (U.S. Department of Labor, Office of the Assistant Secretary for Policy, January 1993).

[4] Hugh Conway and Jens Svenson, "Occupational injury and illness rates, 1992–96: why they fell," *Monthly Labor Review*, November 1998, pp. 36–58.

[5] *Ibid.*, p. 43.

[6] *The Employer-at-Injury Program, 1996–1997* (Oregon Department of Consumer and Business Services, Workers' Compensation Division, July 1998).

[7] Alicia Matter, *Comparison of Workers' Compensation Claims to Oregon Injury and Illness Survey Cases, 1996* (Oregon Deparment of Consumer and Business Services, May 1998); available on the Internet at **http://www.cbs.state.or.us/external/imd/rasums/3198/7_3198r.html**.

High-technology employment: a broader view

High technology employment, 14 percent of total employment, is projected to grow much faster than in the past due to employment gains in high-tech services and among suppliers to computer and electronic components manufacturers

Daniel Hecker

High technology enjoys high visibility. Industry developments are tracked closely in the United States and abroad and the implications for productivity, international competitiveness, national defense, and the general standard of living are of increasing interest.[1] This statement, presented in a 1983 *Monthly Labor Review* article, is still true, as is clear from a number of recent pronouncements. For example, according to the testimony of Alan Greenspan, Chairman of the Federal Reserve Board, dramatic improvements in computing power and communication and information technology are resulting in higher rates of productivity growth and higher real wages, and are helping to control costs.[2] Also, a 1998 National Science Foundation report describes the success of U.S. high-tech industries in foreign markets.[3] Other recent publications report that biotechnology is revolutionizing medicine, agriculture, and environmental fields; miniaturization and new materials are likely to bring major changes in manufacturing, and automobiles are incorporating even more advanced technology.[4] These developments, which suggest that high technology is creating many jobs in the economy, prompted this review of employment trends.

Three previously published articles in the *Review* presented definitions of high-technology industries and occupations and analyzed employment trends and projections.[5] Based on current data, this article updates the lists of high-tech industries used in those articles. It also uses an expanded concept of high-tech employment consisting of three categories. The first category, similar to the earlier concept used by the Bureau of Labor Statistics, includes all employment in industries defined as high technology. The second category includes employment in non-high-tech industries, generated by the purchases of goods and services by high-tech industries for use as inputs to their production processes. This high-tech-generated employment is included because it, like employment in high-tech industries, is derived from the demand for the goods and services produced by high-tech industries.

The third category is an effort to account for the substantial high-tech activity in industries that do not qualify, based on generally accepted criteria, as high tech, or are not suppliers to high-tech industries. While it is not possible to identify all employment in high-tech activities, it is possible to count employment of all scientists, engineers, and technicians–workers who create and apply new technologies–regardless of their industry of employment. This category, therefore, includes all scientists, engineers, and technicians in non-high-tech industries, except for those already included because of employment generated by purchases of high-tech industries.[6]

Based on this concept, this article identifies the number of workers employed in high-tech activities in 1996. It also shows high-technology employment in 1986, its projections for 2006, and its growth over the 1986–96 and 1996–2006 periods. Because high tech is often depicted as a source of "good jobs," information also is presented on earnings in high-tech industries and occupations. Much of the data in the analysis is based on information developed by BLS in producing the 1996–2006 employment projections. Those projections are published in a series

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of articles in the November 1997 *Monthly Labor Review*.[7]

Definitions and data

The term "high tech" is used very broadly to describe not only industries, but also occupations and products. There is fairly wide agreement on the general characteristics of high-technology industries and the criteria for developing lists of such industries. A good example is a document from the Congressional Office of Technology Assessment.[8] It describes high-technology firms as those "that are engaged in the design, development, and introduction of new products and innovative manufacturing processes, or both, through the systematic application of scientific and technical knowledge." This document also points out that high-technology firms typically use state-of-the-art techniques, and, in terms of quantifiable resources, such firms devote a "high" proportion of expenditures to research and development and employ a "high" proportion of scientific, technical, and engineering personnel. A National Science Foundation report on science and technology resources also refers to the employment of scientists, engineers, and technicians and measures of research and development activities as "two of the most important parameters of innovation," and uses them "as surrogates for measuring the broader concept of innovation."[9]

Despite general agreement on the concepts of high tech, there is no general acceptance of precisely which industries to include, because identifying "new" products or "innovative" manufacturing processes and associated industries is very subjective. One approach, adopted by the Bureau of the Census, uses the judgment of industry analysts to identify products embodying new or leading-edge technologies falling within 10 advanced technology areas.[10] A more widely used approach has been to list high-tech industries based on two broad measures of resources used—employment of scientific and technical personnel and research and development intensity. In this approach, studies specify criteria for these measures, such as a specific percent of total employment in scientific and technical occupations and research and development spending, or both, as a percent of sales or value added. Industries that meet those criteria are identified as high tech.[11] This article uses the latter procedure. It uses data on the proportion of employment in an industry accounted for by scientific, technical, and engineering personnel and on the proportion of employment in an industry accounted for by scientific, technical, and engineering personnel engaged in research and development.[12]

Identifying high-tech employment

High-technology occupations are scientific, technical, and engineering occupations, the same group of occupations used to define high-tech industries. They include the following occupational groups and detailed occupations: engineers; life and physical scientists; mathematical specialists; engineering and science technicians; computer specialists; and engineering, scientific, and computer managers. Individuals who are employed in these occupations are collectively referred to as technology-oriented workers.[13] Workers in these occupations need in-depth knowledge of the theories and principles of science, engineering, and mathematics, which is generally acquired through specialized post-high school education in some field of technology—ranging from an associate degree to a doctorate. Some technology-oriented workers engage in research and development to increase scientific knowledge, or to develop products and production processes. Other technology-oriented workers apply technology in other work activities, such as in design of equipment, processes, and structures; computer applications and systems development; sales, purchasing, and marketing; productions and operations; and management and administration.[14]

Occupational Employment Statistics survey data were used in the analysis. This survey provides data on occupational employment of wage and salary workers by industry. It covers all industries except agriculture (minus agricultural services which are covered), forestry, fishing, private households, and the Federal Government. The survey also provided data on occupational employment of workers in research and development for all occupations defined in this article as technology oriented, plus communication, transportation, and utilities operations managers; industrial production mangers; all other managers and administrators; social scientists; most health occupations; and the residual category all other professional, paraprofessional, and technician occupations. These data were collected for mining, construction, manufacturing, communications, public utilities, education, health, and some other service industries. Data are from 1993, 1994, and 1995 Occupational Employment Statistics surveys.[15] Estimates for most industries are for the three-digit industry group level in the 1987 edition of the *Standard Industrial Classification Manual*.[16]

For this analysis, industries are considered high tech if employment in both research and development and in all technology-oriented occupations accounted for a proportion of employment that was at least twice the average for all industries in the Occupational Employment Statistics survey. (Industries with employment of less than 30,000 were excluded from the analysis because of their small size and because data are not available to calculate employment generated by their purchases). Twenty-nine industries, 25 in manufacturing and 4 in the services division, met both criteria.[17] (See table 1.) These industries have at least 6 research and development workers per thousand workers and 76 technology-oriented workers per thousand workers. A subset of 10 high-tech industries, those with both ratios at least 5 times the average, are referred to as high-tech intensive industries. These indus-

Table 1. High technology employment, 1986, 1996, and 2006

(Employment in thousands)

SIC	Industry	Employment			Employment change				Median annual wage in 1997[1]
					Number		Percent		
		1986	1996	2006	1986–1996	1996–2006	1986–1996	1996–2006	
...	Total nonfarm wage and salary employment	98,727	118,731	136,318	20,004	17,587	20	15	$22,734
....	Total high technology	14,482	16,366	21,528	1,884	5,162	13	32	—
	High-technology industries	8,563	9,307	11,431	744	2,124	9	23	—
	High-technology intensive industries	4,433	4,549	6,055	116	1,506	3	33	—
281,6	Industrial chemicals	290	263	261	–27	–2	–9	–1	[2]40,976
283	Drugs	208	259	319	51	60	25	23	31,886
357	Computer and office equipment	469	363	314	–106	–49	–23	–13	37,960
366	Communications equipment	296	269	255	–27	–14	–9	–5	29,494
367	Electronic components and accessories	610	610	700	0	90	0	15	26,187
372,6	Aerospace[3]	855	550	596	–305	46	–36	8	[4]38,292
381	Search and navigation equipment[3]	349	161	110	–188	–51	–54	–32	42,661
382	Measuring and controlling devices	312	297	265	–15	–32	–5	–11	30,306
737	Computer and data processing services	588	1,208	2,509	620	1,301	105	108	40,602
873	Research, development, and testing services	456	569	726	113	157	25	28	34,882
	Other high-technology industries	4,130	4,758	5,376	628	618	15	13	—
282	Plastics materials and synthetics	168	159	145	–9	–14	–5	–9	34,320
284	Soaps, cleaners, and toilet goods	146	154	157	8	3	5	2	26,998
285	Paint and allied products	63	53	52	–10	–1	–16	–2	28,350
287	Agricultural chemicals	54	52	52	–2	0	–4	0	31,824
289	Miscellaneous chemical products	93	93	84	0	–9	0	–10	29,661
291	Petroleum refining	131	100	80	–31	–20	–24	–20	43,202
348	Ordnance and accessories[3]	76	48	42	–28	–6	–37	–12	27,248
351	Engines and turbines	99	84	73	–15	–11	–15	–13	32,885
353	Construction and related machinery	224	232	247	8	15	4	6	27,248
355	Special industrial machinery	150	177	175	27	–2	18	–1	30,472
356	General industrial machinery	234	257	250	23	–7	10	–3	28,392
361	Electric distribution equipment	103	82	68	–21	–14	–20	–17	24,315
362	Electrical industrial apparatus	182	156	122	–26	–34	–14	–22	23,941
365	Household audio and video equipment	82	83	73	1	–10	1	–12	23,546
371	Motor vehicles and equipment	872	963	929	91	–34	10	–4	36,878
384	Medical equipment, instruments, and supplies	213	268	310	55	42	26	16	26,562
386	Photographic equipment and supplies	114	85	65	–29	–20	–25	–24	31,658
871	Engineering and architectural services	681	839	1,052	158	213	23	25	38.210
874	Management and public relations services	445	873	1,400	428	527	96	60	31,970
...	Employment in non-high technology industries generated by purchases of high-technology industries	4,004	4,856	7,488	852	2,632	21	54	—
...	Employment in technology-oriented occupations, but not in high-tech industries or in generated employment	1,915	2,203	2,609	288	406	15	18	—

[1] Wage data are for all industries except agriculture (minus agricultural services which are covered) and the Federal Government. Annual rates are hourly rates times 2,080 hours.

[2] Data shown are for SIC 286. Earnings in SIC 376 were $37,419.

[3] In 1987, the year defense spending reached a post-Viet Nam War high, more than half of employment was defense-related.

[4] Data shown are for SIC 372. Earnings in SIC 376 were $43,680.

NOTE: Dash indicates data not calculated.

tries have at least 15 research and development workers per thousand workers and 190 technology-oriented workers per thousand workers.

Employment in some high-tech industries is very dependent on defense spending. In ordnance and accessories, search and navigation equipment, and aerospace manufacturing, defense-related employment was more than half the total in 1987—the year defense spending reached a post-Vietnam War

high.[18] In this article, these three industries are referred to as highly defense-related industries.

Data on employment generated by purchases of high-tech industries from supplying industries was developed using the Bureau's input-output model. This model provides information on the purchase of commodities by each industry as inputs to its production process. These inputs include raw materials and parts and components that are transformed or physically incorporated into final high-tech products, as well as supplies and services. The employment data generated by the model include not just suppliers to high-tech industries, but their suppliers as well, through subsequent tiers in the production process. Data for the BLS model were derived from 1987 input-output benchmark estimates. Purchase patterns were projected to 1996 and to 2006.

Employment in 1996

High-tech employment accounted for 16.4 million wage and salary worker jobs in 1996 or about 14 percent of all wage and salary jobs in the economy. (See table 1.) High-tech industries employed 9.3 million workers, 4.5 million of them in high-tech intensive industries. Employment of 4.9 million workers was generated in non-high-tech industries to produce the goods and services purchased by high-tech industries. (High-tech industries also made purchases from each other, but the employment generated by those purchases is already included in the 9.3 million in high-tech industries.)[19] An additional 2.2 million technology-oriented workers were employed outside of high-tech industries or their suppliers.

High-tech industries. About 5.8 million (or 63 percent) of the 9.3 million jobs in high-tech industries were in manufacturing industries in 1996. High-tech intensive industries accounted for 2.8 million jobs in manufacturing. High-tech manufacturing industries accounted for nearly one-third of all manufacturing employment in 1996. High-tech service industries made up a much smaller proportion of employment in the services division, 10 percent.[20] High-tech employment is fairly concentrated, with the largest 5 of the 29 high-tech industries accounting for 4.5 million high-tech industry jobs, nearly half of the total. The following tabulation shows those five industries and their employment totals:

Largest high-tech industries	*Employment*
Computer and data processing services	1,208,000
Motor vehicles and equipment manufacturing	963,000
Management and public relations services	873,000
Engineering and architectural services	839,000
Electronic components and accessories manufacturing	610,000

Table 2. Employment in non-high-technology industries generated by purchases of high-technology industries, by largest suppliers, 1986, 1996, and 2006

(Employment in thousands)

Industry	1986		1996			2006		Percent change	
	Employment	Rank	Employment	Rank	Percent distribution	Employment	Rank	1986–1996	1996–2006
Total generated by high-tech industries	4,004	...	4,856	...	100.0	7,488	...	21	5
Wholesale trade	707	1	889	1	18.3	1,209	1	26	36
Miscellaneous business services	157	2	246	2	5.1	440	3	57	79
Personnel supply services	73	12	238	3	4.9	550	2	225	131
Trucking and warehousing	138	3	192	4	3.9	309	6	39	62
Miscellaneous plastics products, n.e.c.	132	4	189	5	3.9	347	4	43	84
Eating and drinking places	109	8	186	6	3.8	319	5	70	72
Metal forgings and stampings	131	5	138	7	2.8	116	13	6	–16
Retail trade, except eating and drinking places	62	15	128	8	2.6	176	8	106	37
Industrial machinery, n.e.c.	118	6	113	9	2.3	81	22	–4	–28
Air transportation	45	30	88	10	1.8	161	9	96	83
Hotels and other lodging places	60	16	86	11	1.8	216	7	43	151
Communications	82	9	82	12	1.7	102	16	–1	25
Accounting, auditing, and other services	65	14	81	13	1.7	137	11	26	69
Depository institutions	80	10	77	14	1.6	157	10	-3	103
Metal coating, engraving, and allied services	55	20	76	15	1.6	102	15	39	35
Blast furnaces and basic steel products	78	22	75	16	1.5	69	27	–5	–7
Fabricated structural metal products	47	29	69	17	1.4	96	19	49	39
Crude petroleum, natural gas, and gas liquids	110	7	69	18	1.4	48	39	–38	–30
Commercial printing and business forms	65	13	68	19	1.4	98	17	5	45
Iron and steel foundries	58	18	63	20	1.3	71	26	9	13
All other industries	1,633	...	1,702	...	35.1	2,682	...	2	52

NOTE: n.e.c. = not elsewhere classified.

Table 3. Output in high technology industries, 1986, 1996, and 2006

(Output in billions of 1992 dollars[1])

SIC	Industry	Output			Output change			
					Number		Percent	
		1986	1996	2006	1986–96	1996–06	1986–1996	1996–2006
...	All nonfarm industries	9,167	11,789	15,252	2,622	3,463	29	29
...	High-tech industries	1,281	1,988	3,231	707	1,243	55	63
...	High-tech intensive industries	512	913	1,915	401	1,002	78	110
281,6	Industrial chemicals	87	89	102	2	13	2	15
283	Drugs	49	74	98	25	24	51	32
357	Computer and office equipment	26	159	636	133	477	512	300
366	Communication equipment	37	63	101	26	38	70	60
367	Electronic components and accessories	38	141	285	103	144	271	102
372,6	Aerospace[2]	113	94	120	–19	26	–17	28
381	Search and navigation equipment[2]	41	28	31	–13	3	–32	11
382	Measuring and controlling devices	27	43	55	16	12	59	28
737	Computer and data processing services	66	166	403	100	237	152	143
873	Research and testing services	28	56	84	28	28	100	50
	Other high-tech industries	769	1,075	1,316	306	241	40	22
282	Plastic materials and synthetics	40	57	64	17	7	43	12
284	Soaps, cleaners, and toilet goods	36	39	49	3	10	8	26
285	Paint and allied products	14	16	19	2	3	14	19
287	Agricultural chemicals	13	19	24	6	5	46	26
289	Miscellaneous chemical products	18	22	24	4	2	22	9
291	Petroleum refining	125	156	204	31	48	25	31
348	Ordnance and accessories, n.e.c.[2]	8	5	5	–3	0	–37	0
351	Engines and turbines	17	21	26	4	5	24	24
353	Construction and related machinery	29	39	56	10	17	34	44
355	Special industry machinery	17	31	34	14	3	82	10
356	General industrial machinery	28	37	42	9	5	32	14
361	Electric distribution equipment	10	12	11	2	–1	20	-8
362	Electrical industrial apparatus	17	25	27	8	2	47	8
365	Household audio and video equipment	12	15	20	3	5	25	33
371	Motor vehicles and equipment	219	320	372	101	52	46	16
384	Medical instruments and supplies	23	42	59	19	17	83	40
386	Photographic equipment and supplies	19	22	25	3	3	16	14
871	Engineering and architectural services	70	91	119	21	28	30	31
874	Management and public relations services	54	106	136	52	30	96	28

[1] Chained 1992 dollars. See James C. Franklin, "Industry output and employment projections to 2006," *Monthly Labor Review*, November 1997, pp. 39–57.

[2] In 1987, the year defense spending reached a post-Viet Nam War high, more than half of employment was defense-related.

NOTE: n.e.c. = not elsewhere classified.

Non-high-tech industries. About 18 percent of the 4.9 million jobs *generated by purchases of high-tech industries* were in the wholesale trade industry. (See table 2.) This industry includes not just independent merchant wholesalers, but also sales branches and offices operated by manufacturers who market their products in establishments apart from their plants.[21] Other industries with large numbers of jobs generated by high-tech industries include the personnel supply services (primarily temporary help supply services), miscellaneous business services, and trucking and warehousing industries. Miscellaneous plastics products ranks high, largely because of purchases by the motor vehicle and equipment, computer and office equipment, and electronic components industries. Metal forging and stampings and the industrial machinery (not elsewhere classified) manufacturing industries rank high, largely because of purchases by the motor vehicle and equipment manufacturing industry and the machinery industries.

Technology-oriented workers. Of the 2.2 million technology-oriented workers employed outside of high-tech industries or their suppliers, about 630,000 were employed in Government (excluding State and local education). The Federal Government accounted for about half of this number, 312,000. Other industries with large numbers of technology-oriented workers include wholesale trade, 180,000; public and private education, 139,000; and personnel supply services, 94,000.

Employment trends, 1986, 1996 and 2006

High-tech employment increased 13 percent, compared with 20 percent for the economy as a whole over the 1986–96 period. This accounted for 9 percent of total employment growth. (See table 1.) During this period, high-tech employment declined from 14.7 percent to 13.8 percent of total employment. Projections for the 1996–2006 period show high-tech and related employment growing more than twice as fast as employ-

ment in the economy as a whole (32 percent, compared with 15 percent). For the same period, high-tech employment is expected to account for 29 percent of all projected growth. In 2006, high-tech employment is projected to account for 15.8 percent of total employment.

From 1986 to 1996, employment in the 29 high-tech industries grew slower (9 percent) than total employment growth (20 percent).[22] However, over the 1996–2000 period, these industries are projected to increase faster (23 percent), despite the slowing of total employment growth (15 percent). The 10 high-tech intensive industries, which grew only 3 percent from 1986 to 1996, are projected to grow by 33 percent.

Employment generated by purchases of high-tech industries has and is projected to continue to grow faster than employment in the high-tech industries. Employment generated by purchases of the 29 industries increased by 21 percent from 1986 to 1996. It is projected to grow by 54 percent over the 1996–2006 period. Employment of technology-oriented workers not included in the industry data increased by 15 percent from 1986–96 and is projected to increase by 18 percent from 1996 to 2006.[23]

High-tech industries. Almost all growth in high-tech industries is in the four service division industries that are considered to be high-tech. Employment in computer and data processing services and management and public relations services roughly doubled from 1986 to 1996. Over the 1996–2006 period, computer and data processing services is projected to double again, while management and public relations services is projected to grow by 60 percent. (See table 1.) The other two high-tech service industries—research, development, and testing laboratories and engineering and architectural services—also have and are projected to grow faster than overall employment in the economy.

Cuts in defense spending over the 1986–96 period caused employment in some high-tech manufacturing industries to decline, and retarded growth in other industries.[24] The three most highly defense-related non-Federal industries in the economy—aerospace, navigation and guidance instruments, and ordnance and accessories manufacturing—had a combined loss of 521,00 jobs, or a 41-percent decline. The other 26 high-tech industries grew 17 percent. Defense is expected to decline much less over the 1996–2006 period.

Except for the three highly defense-related industries, employment in high-tech manufacturing industries, as a group, declined 1 percent over the 1986–96 period and a 1-percent decline also is projected over the 1996–2006 period. Employment in most of the 25 high-tech manufacturing industries has and is projected to decline, and this is the pattern in most manufacturing industries. Noteworthy is the decline in computer and office equipment manufacturing, "an industry that many regard as having *begun* the 'high tech revolution' of the 1970s and 1980s."[25] The only high-tech manufacturing industries with employment growth faster than that for the economy overall are health-related drugs and medical equipment, instruments, and supplies.[26]

Non-high-tech industries. Employment *generated by purchases of the high-tech industries* has grown and is projected to grow much faster than that in the high-tech industries, themselves. Such employment makes up roughly half of all high-tech job growth. Most generated employment growth, both past and projected, is caused by the purchases of just two industries—computer and office equipment and electronic components and accessories manufacturing. These industries accounted for 57 percent of growth generated by high-tech industries between 1986 and 1996 and 88 percent of projected 1996–2006 growth. Purchases grow rapidly to support the several-fold increase in computer and office equipment and in electronic component and accessories output. (See table 3.) Most supplying industries, such as wholesale trade and miscellaneous business services, have relatively modest improvements in labor productivity, so rapid growth in output to supply the computer and components industries results in rapid employment growth. For the other 27 high-tech industries combined, output growth is about the same as that for the total economy, and the employment they generate grows slower than the average for the total economy.

Table 4. Median annual wages of wage and salary workers in selected technology-oriented occupations, 1997

Occupation	Median wages
All occupations	$22,734
Engineering, mathematical, and natural sciences managers	72,675
Electrical and electronics engineers	59,155
Mechanical engineers	50,606
Computer engineers	58,386
Systems analysts, electronic data processing	49,899
Operations and systems researchers and analysts, except computer	49,795
Biological scientists	43,701
Chemists	43,971
Geologists, geophysicists and oceanographers	52,395
Computer support specialists	35,895
Electrical and electronic engineering technicians and technologists	34,237
Chemical technicians and technologists	29,994

NOTE: Data are for all industries except agriculture (minus agricultural services which are covered) and the Federal Government. Annual rates are hourly rates times 2,080 hours.

SOURCE: Occupational Employment Statistics Survey.

High tech, high pay

A number of studies have stated that high-tech jobs are well paid.[27] It clearly is the case for the industries and occupations in this study. Median wages in every high-tech industry in 1997 exceed the median for all industries. (See table 1.) In

Table 5. Varying definitions of high technology

(X indicates included in definition)

SIC	Industry	BLS studies of high technology							Other studies of high technology			
		A broader view, 1999		Another view, 1991		Today and tomorrow, 1983			Emerging digital economy II, 1999	Cyber states 3.0, 1999	Science and engineering indicators, 1998	High tech America, 1986
		High-tech	High-tech intensive	Levels I and II	Level I	Group I	Group II	Group III				
		Selection criteria										
		R&D and technology-oriented employment		R&D employment		Tech-oriented employment	R&D spending	Both tech-oriented and R&D	Judgment	Judgment	R&D spending	Tech-oriented employment
...	Number of three-digit industries, 1987 SIC[1]	[2] 31	[2] 12	40	30	48	6	28	[3] 14	[3] 13	[4] 6	29
...	Industry coverage limits	none	none	none	none	none	manufacturing	none	digital	electronics	manufacturing	manufacturing
131	Crude petroleum and natural gas	...	...	X	X	X	...	...	...	...	...	...
162	Heavy construction, except highway	...	...	...	...	X	...	...	...	...	...	...
211	Cigarettes	([5])	...	X	X	...	...	...	...	...	...	...
229	Miscellaneous textile goods	...	...	X	...	...	...	...	...	...	...	...
261	Pulp mills	([5])	...	X	...	...	...	...	...	...	...	...
267	Miscellaneous converted paper products	...	...	X	...	...	...	...	...	...	...	...
281	Industrial inorganic chemicals[2]	X	X	X	X	X	...	X	...	...	...	X
282	Plastics materials and synthetics	X	...	X	X	X	...	X	...	...	...	X
283	Drugs	X	X	X	X	X	X	X	...	...	X	X
284	Soap, cleaners, and toilet goods	X	...	X	X	X	...	X	...	...	...	X
285	Paints and allied products	X	...	X	X	X	...	X	...	...	...	X
286	Industrial organic chemicals	X	X	X	X	X	...	X	...	...	...	X
287	Agricultural chemicals	X	...	X	X	X	...	X	...	...	...	X
289	Miscellaneous chemical products	X	...	X	X	X	...	X	...	...	...	X
291	Petroleum refining	X	...	X	X	X	...	X	...	...	...	X
299	Miscellaneous petroleum and coal products	...	...	X	X	...	...	...	...	...	...	...
301	Tires and inner tubes	...	...	...	...	X	...	...	...	...	...	...
303	Reclaimed rubber[6]	...	...	...	...	...	...	...	...	...	...	X
324	Cement, hydraulic	...	...	...	...	X	...	...	...	...	...	...
335	Nonferrous rolling and drawing	...	...	X	X	...	...	...	...	...	....	...
348	Ordnance and accessories, n.e.c.	X	...	X	...	...	...	X	...	...	...	X
351	Engines and turbines	X	...	X	...	X	...	X	...	...	...	X
352	Farm and garden machinery	...	...	...	...	X	...	....	...	...	...	...
353	Construction and related machinery	X	...	...	...	X	...	...	...	...	...	X
354	Metalworking machinery	...	...	...	...	X	...	...	...	...	...	X
355	Special industry machinery	X	...	X	X	X	...	X	...	...	...	...
356	General industrial machinery	X	...	X	...	X	...	...	...	...	...	X

See footnotes at end of table.

Table 5. Continued–Varying definitions of high technology

(X indicates included in definition)

SIC	Industry	BLS studies of high technology							Other studies of high technology			
		A broader view, 1999		Another view, 1991		Today and tomorrow, 1983			Emerging digital economy, II, 1999	Cyber states 3.0, 1999	Science and engineering indicators 1998	High tech America, 1986
		High-tech	High-tech intensive	Level I and II	Level I	Group I	Group II	Group III				
		Selection criteria										
		R&D and technology-oriented employment		R&D employment		Tech-oriented employment	R&D spending	Both tech-oriented and R&D	Judgment	Judgment	R&D spending	Tech-oriented employment
357	Computer and office equipment	X	X	X	X	X	X	X	X	X	X	X
358	Refrigeration and service machinery	...	...	...	...	X	...	...	...	...	...	...
359	Industrial machinery, n.e.c.	...	...	X	...	...	...	...	...	...	...	...
361	Electric distribution equipment	X	...	...	...	X	...	X	...	...	...	X
362	Electrical industrial apparatus	X	...	X	X	X	...	X	...	...	...	X
363	Household appliances	...	...	...	...	X	...	...	...	...	...	...
364	Electric lighting and wiring equipment	...	...	...	...	X	...	...	...	...	...	...
365	Household audio and video equipment	X	...	X	...	X	...	X	X	X	...	X
366	Communications equipment	X	X	X	X	X	X	X	X	X	X	X
367	Electronic components and accessories	X	X	X	X	X	X	X	X	X	X	X
369	Miscellaneous electrical equipment	...	...	X	...	X	...	X	X	...	...	...
371	Motor vehicles and equipment	X	...	X	X	X	...	...	...	...	...	...
372	Aircraft and parts[2]	X	X	X	X	X	X	X	...	...	X	X
374	Railroad equipment	...	...	...	...	...	...	...	...	...	...	X
376	Guided missiles, space vehicles	X	X	X	X	X	X	X	...	...	X	X
379	Miscellaneous transportation equipment	...	...	X	...	...	...	...	...	...	...	...
381	Search and navigation equipment	X	X	X	X	X	...	X	...	X	...	X
382	Measuring and controlling devices	X	X	X	X	X	...	X	X	X	...	X
383	Optical instruments and lenses[7]	...	...	...	...	X	...	X	...	...	...	...
384	Medical instruments and supplies	X	...	X	X	X	...	X	...	X	...	X
386	Photographic equipment and supplies	X	...	X	X	X	...	X	...	X	...	X
481	Telephone communications	...	...	...	...	...	...	...	X	X	...	...
482	Telegraph and other communications	...	...	...	...	...	...	...	X	X	...	...
483	Radio and television broadcasting	...	...	...	...	X	...	...	X	...	...	...
484	Cable and other pay TV services	...	...	...	...	...	...	...	X	X	...	...
489	Communications services, n.e.c.	([5])	...	...	...	X	...	...	X	X	...	...
491	Electric services	...	...	...	...	X	...	...	...	...	...	...
493	Combination utility services	...	...	...	...	X	...	...	...	...	...	...
504	Wholesale professional and commercial equipment[8]	...	...	...	...	X	...	...	X	...	...	...

See footnotes at end of table.

Table 5. Continued–Varying definitions of high technology

(X indicates included in definition)

SIC	Industry	BLS studies of high technology							Other studies of high technology			
		A broader view, 1999		Another view, 1991		Today and tomorrow, 1983			Emerging digital economy II, 1999	Cyber states 3.0, 1999	Science and engineering indicators, 1998	High tech America, 1986
		High-tech	High-tech intensive	Levels I and II	Level I	Group I	Group II	Group III				
		Selection criteria										
		R&D and technology-oriented employment		R&D employment		Tech-oriented employment	R&D employment	Both tech-oriented and R&D	Judgment	Judgment	R&D spending	Tech-oriented employment
506	Wholesale electrical goods	...	...	...	...	X	...	...	...	...	...	...
508	Wholesale machinery, equipment, and supplies	...	...	...	...	X	...	...	...	...	...	...
573	Radio, television, and computer stores	...	...	...	...	...	...	...	X	...	...	...
737	Computer and data processing services	X	X	X	X	X	...	X	X	X	...	...
871	Engineering and architectural services	X	...	X	X	X	...	...	...	...	...	...
873	Research and testing services	X	X	X	X	X	...	X	...	...	...	...
874	Management and public relations	X	...	X	X	...	...	...	...	...	...	...
89	Services, n.e.c.	...	...	X	X	X	...	...	...	...	...	...

[1] Studies prior to 1987 used the 1977 SIC system.

[2] This study combines SICs 281 and 286 (Industrial chemicals) and SICs 372 and 376 (Aerospace).

[3] Identified industries at the 4-digit SIC, and may not include all constituent 4-digit SICs.

[4] The Organisation for Economic Co-operation and Development industries, on which the definition is based, may not correspond exactly to SIC industries. OECD combines SICs 372 and 376 (Aerospace) and SIC 366 and 367 (Electronics-communications).

[5] Met the criteria for high technology, but excluded because of small size and because employment generated by purchases could not be determined.

[6] SIC 303 appears in the 1977 SIC only; in the 1987 SIC, it is part of SIC 306, Miscellaneous rubber products, n.e.c.

[7] This industry appears in the 1977 SIC system only. In the 1987 SIC, it is part of SIC 384.

[8] In the 1977 SIC, it was part of SIC 508, Wholesale machinery, equipment, and supplies.

n.e.c. = not elsewhere classified.

10 of the industries (6 within high-tech intensive), wages were more than 50 percent higher than the median for all industries. However, industries with the lowest wages, such as SIC 365, Household audio and video equipment and SIC 362, Electrical industrial apparatus were not much higher. Median wages in 7 out of the 12 technology-oriented occupations shown in table 4 were more than twice the median for all occupations and even for chemical technicians and technologists, the lowest paid, the median was about a third higher.[28]

Data issues

Quality. Standard sources of employment and related data were used to identify and analyze high-tech employment in this article. Nevertheless, these data sources have many deficiencies when used in this manner. For example, ratios of scientific and technical employment to total employment used to measure technologic intensity in an industry were derived from the Occupational Employment Statistics survey. This survey collects data on employment of technology-oriented workers and on research and development workers primarily for three-digit industry groups. Therefore, these selection criteria provide a measure of average intensity for three-digit industry groups. However, industries identified as high tech may have establishments employing few research and development workers or other technology-oriented workers and fall short of the ratios used as cutoff points. These establishments also may produce low-tech products. For example, the high-tech industry, Computer and office equipment manufacturing (SIC 357) includes Office machines, not elsewhere classified (SIC 3579), which has establishments primarily producing low-tech products, such as paper cutters, pencil sharpeners, and staple removers, and it most likely employs few technology-oriented workers.

Conversely, industries not identified as high tech may have establishments that individually do meet the high-tech crite-

ria. Obvious cases are Government research and development laboratories, college and university research and development laboratories, and personnel supply firms specializing in technology-oriented workers. None of these are separately identified in the Occupational Employment Statistics survey. However, as indicated earlier, the inclusion of all technology-oriented workers within high-tech employment, regardless of industry, at least captures the key technology-oriented workers in these activities.

Judgment. In addition to data quality issues, clearly there are judgmental issues that have a bearing on the analysis of high-tech employment. For example, as indicated earlier, the proportion of employment in technology-oriented occupations that was used as the cut off for defining high-tech industries is very subjective. Using only scientific and technical occupations as technology-oriented occupations to include in high-tech employment also is somewhat subjective. A contention could be made to include many other occupations involved in repairing or operating the products of high-tech industries. Although these workers usually require a more limited knowledge of technology than do scientific and technical workers, their work may have more technologic content than many workers employed in high-tech industries. In 1996, an estimated 2.4 million workers not included in the industry totals were employed in occupations that repair products produced by high-tech industries. Half of the workers repaired the output of the motor vehicle and parts manufacturing industry. Other workers, such as aircraft pilots, telephone operators, and radiologic technologists and technicians operated the output of high-tech industries as their primary duty. Workers selling high-tech products also are related logically to high tech, but available data do not permit a count of them.

Comparison with other analyses

The industries meeting the definition of high tech in this study are very similar to those in previous BLS analyses and, like the other BLS analyses, are more inclusive than most other studies. (See table 5, pages 24–26.) The 1983 BLS analysis developed three high-tech industry lists based on different definitions.[29] One was based on employment of technology-oriented workers as a proportion of total employment, another was based on the ratio of research and development expenditures to net sales, and the other combined the two criteria. The 1991 BLS analysis used data on research and development employment, then newly available from the Occupational Employment Statistics survey.[30] More recently, the National Science Foundation used a definition from the Organisation for Economic Co-operation and Development (OECD) which was based solely on an industry's research and development spending to value added.[31] OECD experimented with various other criteria for that study, including employment of all scientific and technical personnel, but because of the absence of data for some countries, it did not use any other criteria, and the coverage was limited to manufacturing industries. Another study, published in 1986, also covered only manufacturing industries.[32] In that analysis, employment of all technology-oriented workers was the only criteria used to define an industry as high tech. One analysis by the American Electronic Association in 1999, and another, prepared by the U.S. Department of Commerce in 1999, relied on judgment to identify high-tech industries, rather than statistical measures of technologic intensity derived from survey data.[33]

THE LIST OF 29 HIGH-TECH INDUSTRIES used in this study is similar to lists in other BLS studies. Using the most inclusive list in the 1983 study would identify high-tech industry employment in 1996 at 13.3 million, and using the more inclusive list in the 1991 study, would put employment at 10.2 million. This compares with 9.3 million for the 29 high-tech industries in this study. The 1983 study-definition is 3.9 million higher and the 1991 study is 0.9 million higher than the definition of high-tech industries in this study. The 1983 study-definition includes several wholesale trade industries, which had 2.1 million workers in 1996. These industries include establishments that sell the output of high-tech manufacturers. In addition, 812,000 were in communications and utilities industries, 534,000 were in heavy construction, and some were in smaller industries. However, the 1983 study does not include management and public relations services or ordnance and accessories. The 1991 definition counts 240,000 high-tech workers in miscellaneous converted paper products, 168,000 in nonferrous rolling and drawing, and 153,000 in miscellaneous electrical equipment, however, it does not include construction machinery or electrical distribution equipment. □

Notes

[1] Richard W. Riche, Daniel E. Hecker, and John U. Burgan, "High technology today and tomorrow: a small slice of the employment pie," *Monthly Labor Review*, November 1983, p. 50.

[2] Monetary Policy Testimony and Report to Congress, Testimony of Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System Before the Subcommittee on Domestic and International Monetary Policy of the Committee on Banking and Financial Services, U.S. House of Representatives, Feb. 24, 1998.

[3] "Industry, Technology, and Competitiveness in the Marketplace," *Science and Engineering Indicators* (Arlington, VA, National Science Board, National Science Foundation, 1998), ch. 6, and Lawrence M. Rausch, "High-tech drives global economic activity," *National Science Foundation Issues Brief*, NSF 98–319 (Arlington, VA, Division of Science Resources Studies, July 20, 1998).

[4] See *U.S. Industry and Trade Outlook* (DRI/McGraw-Hill, Standard and Poor's and U.S. Department of Commerce/International Trade Adminis-

tration, 1999), pp. 11–13 through 11–15, 16–1, and ch. 36; "John Carey, "We Are Now Starting the Century of Biology," and Neil Gross and Otis Port "The Next Wave for Technology," *Business Week*, Aug. 24–31, 1998, pp. 80–87; David Stipp, "Engineering the future of food," *Fortune*, Sept. 28, 1998, pp. 128–44; and Daniel McGinn and Adam Rogers, "Operation: Supercar," *Newsweek*, Nov. 23, 1998, pp. 48–53.

[5] Riche and others, "High technology today and tomorrow," pp. 50—58; Paul Hadlock, Daniel Hecker, and Joseph Gannon, "High technology employment: another view," *Monthly Labor Review*, July 1991, pp. 26–30; and William Luker, Jr. and Donald Lyons, "Employment shifts in high-technology industries, 1988–96," *Monthly Labor Review*, June 1997, pp. 12–25.

[6] High tech also has spill-over effects that benefit other commercial sectors and lead to productivity gains, business expansion, and creation of high wage jobs. See *Science and Engineering Indicators*, 1998, pp. 6–5.

[7] In *Monthly Labor Review*, see James C. Franklin, "Industry output and employment projections to 2006," pp. 39–57; and George T. Silvestri, "Occupational employment projections to 2006," November, 1997, pp. 57–83.

[8] *Technology, Innovation, and Regional Economic Development* (U.S. Congress, Office of Technology Assessment, Sept. 9, 1982).

[9] *Science and Technology Resources in U.S. Industry*, Special report NSF88–321 (Arlington, VA, National Science Foundation, December 1988), p.vii.

[10] The Bureau of the Census listed 10 advanced technology product areas to track and understand international trade. These areas are: biotechnology, life sciences technologies, opto-electronics, computers and telecommunications, electronics, computer-integrated manufacturing, materials design, aerospace, weapons, and nuclear technology. See *Science and Engineering Indicators*, 1998, pp. 6–12 and 6–13. However, no employment data are collected by product or product categories, so the employment associated with production of these products cannot be determined. The Organisation for Economic Co-operation and Development also has developed a list, see Thomas Hatzichronoglou, "Revision of the High-technology Sector and Product Classification," STI working papers (Paris, OECD, 1997), pp. 7–10. Also see Riche and others, "High technology today and tomorrow," pp. 50–53.

[11] Some, however, exclude service industries or industries with little employment.

[12] The category, research and development workers, is a subset of technology-oriented workers.

[13] See Riche and others, "High technology today and tomorrow," pp. 54–55, which also defined these occupations as technology-oriented. However, it did not include engineering, scientific and computer managers, an occupation not surveyed separately at that time.

[14] Data are not collected separately in BLS surveys for these categories, but are collected by the National Science Foundation. See the National Science Foundation website: **http://sestat.nsf.gov**

[15] Until 1996, the Occupational Employment Statistics program followed a 3-year cycle.

[16] *Standard Industrial Classification Manual, 1987* (Executive Office of the President, Office of Management and Budget).

[17] Excluded industries are SIC 211 Cigarettes, SIC 261 Pulp mills, and SIC 489 Communications services, not elsewhere classified. Two industries consist of two 3-digit SICs: Aerospace, which consists of SIC 372, aircraft and parts and SIC 376 Guided missiles and space vehicles; and Industrial chemicals, which consists of SIC 281, Inorganic and SIC 284, Organic. These were combined because the system used to provide employment generated by an industry's purchases cannot provide separate data.

[18] Allison Thomson, "Defense-related employment and spending, 1996–2006," *Monthly Labor Review*, July 1998, pp. 14–33.

[19] About 983,000 jobs were generated in high-tech industries by purchases from each other. The three largest suppliers were electronic components manufacturing (234,000 jobs generated), computer and data processing services (108,000 jobs), and management and public relations services (88,000 jobs).

[20] This division is part of the services-producing sector. No other divisions within the services-producing sector—trade, communications, utilities, transportation, finance, or government had high-tech industries.

[21] Industry data used in this article are collected on an establishment basis. An establishment is defined as an economic unit, such as a factory or office, generally at a single physical location, where business is conducted.

[22] High-tech industry growth from January 1988 to January 1996 is discussed in Luker and Lyons, "Employment shifts in high-technology industries," pp. 12–25, with some detail by 4-digit SIC industry.

[23] In all industries, technology-oriented workers grew 24 percent and are projected to grow 35 percent.

[24] See Thomson, "Defense-related employment and spending;" and Ron L. Hetrick, "Employment in high-tech defense industries in a post cold war era," *Monthly Labor Review*, August 1996, pp. 57–63, and Luker and Lyons, "Employment shifts in high technology industries."

[25] See Luker and Lyons, "Employment shifts in high technology industries," pp. 16 and 21. Employment trends in computer manufacturing are discussed in Jacqueline Warnke, "Computer manufacturing: change and competition," *Monthly Labor Review*, August 1996 pp. 18–29.

[26] Employment trends in drugs manufacturing are discussed in Stephen Heffler, "Drugs manufacturing: a prescription for jobs," *Monthly Labor Review*, March 1995 pp.12–22.

[27] See *Science and Engineering Indicators*, pp. 6–5 and 6–16; *Cyberstates 3.0* (Washington, DC, American Electronics Association, 1999), p. 7, and Hadlock, Hecker, and Gannon, pp. 27 and 28.

[28] Data are from the Occupational Employment Statistics Survey.

[29] Riche and others, "High technology today and tomorrow."

[30] Hadlock and others, "High technology employment: another view; Luker and Lyons used this definition."

[31] *Science and Engineering Indicators*, 1998; and Rausch, "High-tech drives global economic activity." Data, which are for all OECD countries, are presented in Hatzichronoglou, "Revision of the High-technology Sector."

[32] Ann Markusen, Peter Hall, and Amy Glasmeier, *High Tech America, the what, how, where, and why of the sunrise industries* (Boston, Allen and Unwin, 1986), pp. 14–15. It also used Occupational Employment Statistics data; research and development data were not then available from this survey.

[33] See *Cyberstates 3.0*, pp. 103–4; and *The Emerging Digital Economy II* (U.S. Department of Commerce, June 1999), p. 15.

Consumer Price Index research series using current methods, 1978–98

BLS research indicates that the measured rate of inflation would have been lower since 1978 if methods currently used in calculating the Consumer Price Index for All Urban Consumers had been in place from that year to the present

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The Consumer Price Index (CPI) is the most widely used measure of inflation in the United States and affects nearly all Americans. Annual cost-of-living adjustments (COLAs) for Social Security recipients and Federal and military retirees are tied to changes in the CPI, which also is used to determine the annual escalation of Federal income tax brackets, as well as personal exemption and standard deduction amounts. In addition, the CPI is used in the calculation of many key economic indicators that require real- or constant-dollar measures, including estimates of income, earnings, productivity, output, and poverty.

The Bureau of Labor Statistics has made numerous improvements to the CPI over the past quarter-century. While these improvements make the present and future CPI more accurate, *historical* price index series are not adjusted to reflect the improvements.[1] Many researchers, however, would like a historical series that was measured consistently over the entire period. Accordingly, this article presents an estimate of the CPI-U from 1978 to 1998 that incorporates most of the improvements made over that time span into the entire series. The new measure, called the *CPI research series using current methods* (CPI-U-RS), attempts to answer the question, "What would have been the measured rate of inflation from 1978 forward had the methods currently used in calculating the CPI-U been in use since 1978?"[2]

The CPI-U-RS was constructed by adjusting national CPI-U index series for methodological improvements, usually at the level of the item stratum, such as new vehicles or residential rent.[3] That is, the adjustments were made, not to the aggregate all-items CPI-U directly, but rather to its component indexes. These adjusted series were then aggregated by using the official CPI-U base-period expenditure weights to form the all-items CPI-U-RS and other high-level aggregates.[4] In this regard, it is important to note that the component indexes were adjusted directly; individual prices were not used to recompute those indexes. For example, as explained later, adjustments were made to the historical values of the CPI-U television index to reflect the estimated impact on that index of hedonic regression-based quality adjustment, had that method been employed prior to its implementation in January 1999. No attempt was made, however, to recompute the television index by applying hedonic regression analysis to the individual television prices collected for the CPI during the 1978–98 period. Such an effort would not have been feasible, in part because the early price data are no longer available.

It is also important to recognize that the CPI-U-RS provides an annual inflation series that adjusts only for specified changes in BLS methodology. No attempt has been made to incorporate research results, such as those on the value of safer, but perhaps less comfortable, air travel, for which there is no corresponding method-

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ological change in the CPI-U. Nevertheless, the CPI-U-RS is expected to be of use to forecasters and other researchers in analyzing the trends and other movements in consumer inflation over the last two decades. Indeed, the measure should help answer the question of the degree to which the measured rate of inflation has been affected by improvements BLS has made.[5]

Over the 21-year period of the study (December 1977 to December 1998), the CPI-U-RS increased 141.2 percent, compared with 163.9 percent for the CPI-U. The figures represent an average annual increase of 4.28 percent for the CPI-U-RS and 4.73 percent for the CPI-U; the average annualized difference between the two measures is thus 0.45 percent. (See chart 1.)

Methodological improvements

A number of significant methodological improvements have been made to the CPI since 1978. The CPI-U-RS differs from the CPI-U in that the CPI-U-RS is adjusted to incorporate estimates of what the measured rate of inflation would have been had those improvements to the CPI-U been made earlier. This section focuses on those methodological improvements that affect the CPI-U-RS and how the adjustments were derived.

Improvements made to the CPI from 1978 to 1998 and reflected in the CPI-U-RS. Exhibit 1 lists all the improvements made to the CPI since 1978 for which estimates of historical effects were made and included in the CPI-U-RS.

1. Use of rental equivalence to measure changes in homeowner costs. In 1983, a major improvement was introduced when the homeownership component of the CPI-U was changed from the cost of the purchase of a home to a flow-of-services approach. Rental equivalence is incorporated into the CPI-U-RS from 1978 to 1982 by first replacing the old weight for homeowner cost in December 1977 (which was based on home purchases, contracted mortgage interest, and so on) by a weight based on the rental equivalence concept. The price change for the new rental equivalence category is then imputed from 1978 to 1982 by changes in the CPI residential rent index. This technique for incorporating rental equivalence into the CPI-U-RS corresponds to how the Bureau created the CPI-U-X1, an experimental consumer price index that employed the rental equivalence treatment from 1967 to 1982.[6] Thus, the difference between the CPI-U and CPI-U-X1 is also reflected in the CPI-U-RS.

Chart 1. Consumer Price Index for All Urban Consumers (CPI–U) and Consumer Price Index research series using current methods (CPI–U–RS), 1977–98

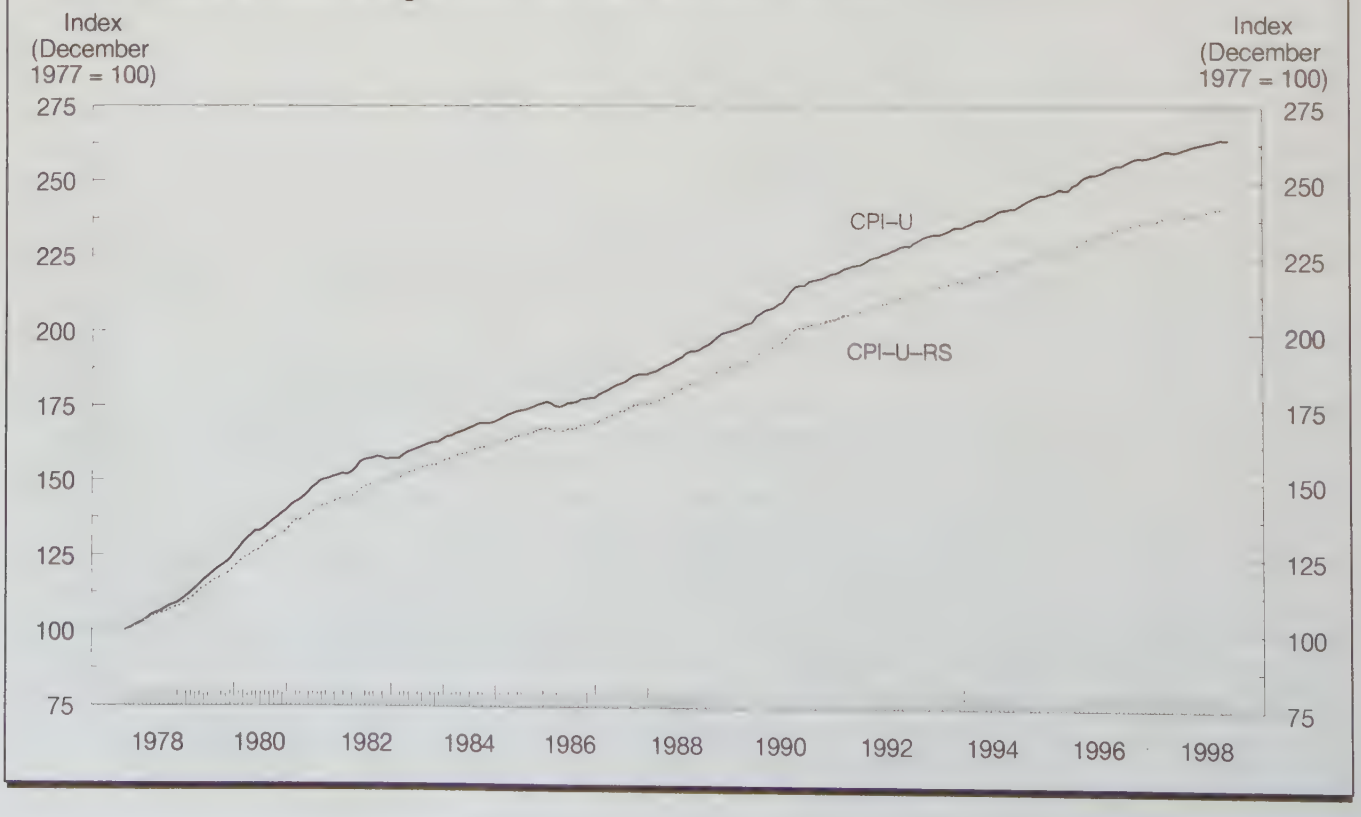


Exhibit 1. Improvements to the Consumer Price Index for All Urban Consumers (CPI-U) since 1978 and their effect on the CPI research series using current methods (CPI-U-RS)[1]

Change	Description	Year implemented in CPI-U	CPI-U-RS incorporates estimate of change from—
Use of rental equivalence to measure changes in homeowner costs	Changed homeowners' component from cost of purchase to value of rental services	1983	1978–82
Quality adjustment of used-car prices	Adjusted prices of used cars for differences in quality after changeovers to new models	1987	1978–86
Quality adjustment of sampled housing units to reflect aging of the units	Adjusted rental values in CPI sample to reflect aging	1988	1978–87
Quality adjustment of apparel prices	Used regression models to adjust apparel prices for changes in quality when new clothing lines are introduced	1991	1978–90
Treating shifts between brand-name and generic drugs as price changes	Introduced new procedures that allow generic drugs to be priced when a brand-name drug loses its patent	1995	1978–94
Change in shelter formula to eliminate composite estimator	Replaced composite estimator with a 6-month chain estimator. Underreporting of 1-month rent changes had resulted in missing price changes in residential rent and homeowners' equivalent rent	1995	1978–94
Change in shelter formula to improve rental equivalence estimator	Modified imputation of homeowners' implicit rent to eliminate upward-drift property of previous estimator	1995	1987–94
Elimination of functional form bias for CPI food-at-home categories	Introduced seasoning procedures to eliminate upward bias derived by setting base-period prices of newly initiated items	1995	1978–94
Elimination of functional form bias for other CPI commodity and service categories	Extended food-at-home seasoning procedures to remainder of commodities and services. Base-period prices were left unchanged in most noncomparable substitutions	1996	1978–96
Quality adjustment of personal-computer prices	Used regression models to adjust personal-computer prices for changes in quality	1998	1987–97
Elimination of automobile finance charges	Deemed out of scope of definition of CPI	1998	1978–97
Quality adjustment of television prices	Used regression models to adjust television prices for changes in quality	1999	1978–98
Accounting for consumer substitution within CPI item categories	Introduced a geometric-mean formula that assumes a modest degree of consumer substitution within most CPI item categories	1999	1978–98
Treating mandated pollution control measures as price increases	Adjustments are no longer made to changes in pollution control regulations, which are now viewed as price changes and not quality changes	1999	1978–98

[1] This exhibit generally follows Exhibit 1 in John S. Greenlees and Charles C. Mason, "Overview of the 1998 revision of the Consumer Price Index," *Monthly Labor Review*, December 1996, pp. 3–9.

2. Quality adjustment of used-car prices. In 1967, the Bureau began to adjust new-car prices for changes in the quality of the cars. In 1987, the Bureau began adjusting the used-car index for similar changes by applying, to each model in the used-car sample, the percentage of quality adjustment employed when the model was new. A more aggregate version of this same procedure is used to adjust the used-car index of the CPI-U-RS downward from 1978 to 1986, by first estimating the general distribution of model years within the used-car sample in each of those years and then estimating the effect of the quality adjustments applied to new cars of the same model years.[7]

3. Quality adjustment of sampled housing units to reflect aging. In 1988, quality adjustments reflecting the aging of the housing stock sample began. The CPI-U-RS incorporates an estimate of the effect of this change by adjusting the residential rent and owners' equivalent rent indexes upward by about 0.3 percent per year from 1978 to 1987.[8] This figure represents the average of the adjustment factors used in the CPI from 1988 to 1999.[9]

4. Quality adjustment of apparel prices. In 1991, the Bureau initiated the use of hedonic models to estimate changes in quality for apparel commodities. Using a BLS study that estimated the effect of this improvement over the last 6 months of 1991, the Bureau adjusted all of the CPI-U-RS apparel commodity indexes from 1978 to 1990 upward by approximately 0.4 percent per year.[10]

5. Treating shifts between brand-name and generic drugs as price changes. In 1995, a new procedure was introduced that allows a generic drug to be priced when the corresponding brand-name drug loses its patent protection. (The procedure also allows the price of the generic drug to be directly compared with that of the brand-name one.) On the basis of a review of the CPI prescription drug sample from 1993 to 1997, it is estimated that this change reduced the prescription drug index during that period by an average of 0.4 percent per year. Accordingly, the CPI-U-RS prescription drug index is also adjusted downward by varying amounts from 1978 to 1994, depending on the number of generic drugs entering the market each year during that period (relative to the number entering the market from 1993 to 1997).[11]

6. Changes in shelter formulas in 1995. Two changes implemented in January 1995 affected shelter components of the CPI. The first was the elimination of the composite estimation approach that used a weighted average of 1- and 6-month changes in rent to estimate monthly price changes for individual housing units in the CPI rent sample. Evidence indicated that, because some respondents misreported 1-month rent changes, the composite estimator underestimated price changes; therefore, it was replaced by a 6-month chain estimator in January 1995. This methodological improvement affected both the residential rent and owners' equivalent rent indexes.

The second shelter-related change made in January 1995 affected only the owners' equivalent rent index. The Bureau modified the formula for calculating that index to eliminate an upward-drift tendency the former method had between 1987 and 1995.

The CPI-U-RS is adjusted for these two improvements in the shelter component from 1991 to 1995 by using an experimental Laspeyres consumer price index (called the CPI-U-XL) in place of the CPI-U for both residential rent and owners' equivalent rent.[12] The CPI-U-XL, published for years beginning in 1991, employs the post-1994 estimation formulas for both shelter indexes. Substituting the CPI-U-XL for the CPI-U had the effect of adjusting the residential rent index upward by an average of about 0.1 percent per year during the 1991–95 period. This average effect was also applied to the residential rent index from 1978 to 1990. The average downward adjustment of the owners' equivalent rent index from 1991 to 1995 was 0.6 percent per year, and the effect was used to adjust the owners' equivalent rent component of the CPI-U-RS from 1987 to 1990. From 1978 to 1986, when the owners' equivalent rent index was subject only to the downward bias resulting from the use of composite estimation, it was adjusted *upward* by about 0.1 percent a year for the CPI-U-RS.[13]

7. Quality adjustment of personal-computer prices. In 1998, hedonic regression models were first used to adjust personal-computer prices for changes in quality. Estimates based on an analysis of 1998 data indicate that this change has had the effect of lowering the personal-computer index by about 6.5 percent per year. The CPI-U-RS uses this figure to adjust the personal-computer component downward during the period 1987–97.[14]

8. Elimination of automobile finance charges. Automobile finance charges were dropped from the CPI in 1998 on the basis that they did not reflect a cost of current consumption. The CPI-U-RS eliminates the automobile finance charges index from 1978 to 1997.[15]

9. Quality adjustment of television prices. Hedonic techniques were used to adjust the television component of the CPI for changes in quality for the first time in 1999. Based on BLS research indicating that the television index would have been approximately 0.1 percent lower per year with the quality adjustments applied from August 1993 to August 1997, the CPI-U-RS estimates the effect of this improvement on the index from 1977 to 1998 by adjusting the index down by that

amount from 1978 to 1998.[16]

10. Eliminating functional form bias and accounting for consumer substitution within CPI item categories. The CPI-U-RS uses estimates derived from the experimental CPI using geometric means (CPI-U-XG) to account for both functional form bias and consumer substitution within item categories.

In 1995 and 1996, improvements were made to the CPI to eliminate functional form bias, an upward bias in measured price changes occurring during the period immediately following the introduction of new item samples into the CPI.[17] The new seasoning procedures eliminated the bias for the food-at-home categories in 1995 and for the other CPI categories in mid-1996.[18]

While the elimination of functional form bias improved the CPI as a measure of price change for a fixed market basket of goods and services, the estimator was still considered an upper bound to a cost-of-living index because it did not account for consumer substitution—the fact that consumers can, and do, respond to changes in the relative prices of different items. Since January 1999, a geometric-mean formula has been used to calculate most basic indexes in order to address consumer substitution within CPI item categories.[19]

The Bureau began publishing the CPI-U-XG in 1997; as with the CPI-U-XL, historical indexes are available only for the years 1991–98. Indexes calculated with the use of geometric means not only address consumer substitution within item categories; they also are free of functional form bias. Therefore, the CPI-U-RS uses estimates derived from the CPI-U-XG to adjust for both functional form bias and consumer substitution within CPI item categories. Specifically, for those CPI-U categories that now use a geometric-mean formula, the CPI-U-RS substitutes price changes from the CPI-U-XG for the period 1991–98. For food-at-home categories, average differences between the CPI-U and CPI-U-XG over the 1991–94 period were used to extrapolate estimates for 1978 to 1990. For other categories that now use the geometric-mean formula, average differences between the same two indexes from January 1991 through May 1996 were used to extrapolate estimates for 1978 to 1990. For those item categories in the CPI-U that continue to use the Laspeyres formula, the CPI-U-RS accounts for the functional form bias present in the CPI-U from 1978 to 1996 by using internal estimates of the bias.[20]

11. Treating mandated pollution control measures as price increases. In 1999, the Bureau reversed its policy regarding the treatment of pollution control measures designed to improve the environment. From 1967 to 1998, federally mandated improvements in emissions were treated as improvements in quality; starting in 1999, they began to be treated as price increases instead.[21] The CPI-U-RS is adjusted upward by removing the environmental quality adjustments made to the motor vehicle and gasoline indexes from 1978 to 1998.

Improvements made to the CPI from 1978 to 1998 and not incorporated into the CPI-U-RS. Several improvements were made to the CPI since 1978, for which no adjustments to the CPI-U-RS were made. Adjustments to the CPI-U-RS were not made if the impact of the improvement on the rate of growth of the index could not be estimated or was believed to be negligible. Improvements of this nature include the updating of CPI expenditure weights and area samples accompanying the CPI revisions of 1978, 1987, and 1998;[22] improvements to CPI imputation methods in 1984, 1989, and 1992;[23] improvements in the treatment of seasonal items in 1987;[24] an improved treatment of discount airline fares in 1991;[25] improved sample augmentation procedures in 1992;[26] increased sample sizes for hotels and motels in 1992;[27] improvements in the methods for pricing hospital services in 1997;[28] a change from area- to item-based sample rotation procedures in 1999;[29] revisions to the shelter sample and estimators in 1999;[30] and changes to the treatment of utility rebates in 1999.[31]

Limitations of the CPI-U-RS. The CPI-U-RS is limited chiefly in two ways. First, the magnitude of each adjustment made to the CPI-U-RS has a degree of uncertainty surrounding it. Second, some improvements to the CPI-U, for which no adjustments were made to the CPI-U-RS, may nevertheless have affected the rate of inflation, as measured by the CPI-U.

Most adjustments to the CPI-U-RS were based on BLS research that estimated the impact of methodological changes to the CPI over a relatively short period of time, and the effect of a given methodological change (outside the period of study) is assumed to be constant over time. For example, while the price changes for the CPI-U-XG were used to adjust most CPI item categories from 1991 to 1998, the CPI-U-RS was adjusted downward from 1978 to 1990 by the *average* differences between the CPI-U and CPI-U-XG from 1991 to the mid-1990s. Similarly, apparel indexes for the CPI-U-RS from 1978 to 1990 are adjusted on the basis of studies of the effect of the improvement during the last 6 months of 1991. While there is typically a great degree of confidence about the *direction* of the adjustment made to the CPI-U-RS, extrapolations of this type could call into question the *size* of the adjustments.

Similarly, as noted above, a dozen or so methodological improvements have been made to the CPI for which *no* estimate was made for the CPI-U-RS. Other organizations, such as the Congressional Budget Office and the Council of Economic Advisers, have estimated the impact of some of these improvements on the projected rate of inflation for budget forecasts. For example, in 1997, the CPI procedures for pricing hospital services were changed, improving the ability of the

index to reflect changes in the scope and types of payors and treatments. The Congressional Budget Office and the Council of Economic Advisers have estimated that those methodological improvements in the measurement of prices of hospital services will have a modest downward impact on the *future* measured rate of inflation. While it is probable that the measured rate of inflation for hospital services would have been lower had this change been implemented in the CPI earlier, it would be extremely difficult to quantify the effect of the change *retroactively*. CPI data would be of little value for such an exercise, because the 1997 improvements primarily affected the nature of the data collected, not the computational methods applied to those data. Quantification of the effects of improvement would have to be based on knowledge and analysis of past trends in, for example, managed care plans' market penetration, the effectiveness of third-party cost control efforts, cost shifting to privately paying patients, and shifts between inpatient and outpatient treatment for various medical conditions. Now, controversy surrounds some of these trends and their impacts, and a definitive examination of each is beyond the scope of this article. In general, however, the adjustments for inflation that are incorporated into the CPI-U-RS are those for which the Bureau has special expertise or data. The assessment of the impact of other adjustments, such as those for the 1997 improvements in hospital services, is left to other interested parties.

The treatment of expenditure weight updates also is worthy of explanation here. The Bureau does not view the weight updates of 1987 and 1998 as methodological changes; periodic updates have long been a feature of the CPI. Moreover, it is not clear that weighting individual CPI series using the current 1993–95 base period would yield, for example, an improved aggregate measure for the year 1980. Therefore, the CPI-U-RS is not adjusted for the 1987 and 1998 updates. In December 1998, the Bureau announced that, beginning in 2002, expenditure weight updates would occur every 2 years rather than approximately once every decade. No attempt has been made in this article, however, to incorporate the estimated historical impact of biennial updates between 1978 and 1987 and between 1987 and 1998. Such an analysis would face significant hurdles regarding the availability of data and commitment of resources.[32]

Results

Over the 21-year period of the study (December 1977 to December 1998), the CPI-U-RS increased 141.2 percent, compared with 163.9 percent for the CPI-U over the same period; the annualized difference between the two measures is approximately 0.45 percent. Table 1 gives the December-to-December percent changes for 1978 through 1998 for the CPI-U and CPI-U-RS for the all-items index and for major CPI groups.

Analysis of results: changes over time. The difference between the all-items indexes of the CPI-U and CPI-U-RS changed markedly over time. From 1978 to 1982, driven largely by the use of rental equivalence in the CPI-U-RS, that index increased about 1 percent per year more slowly, on average, than the CPI-U, although substantial variations occurred from year to year. The differences between the two measures became much smaller after rental equivalence was introduced into the CPI-U in 1983, shrinking to around 0.1 percent per year from 1983 to 1986. The relatively small differences during that period were due in large part to upward adjustments made to the CPI-U-RS housing categories to reflect composite estimation and aging bias. These adjustments partially offset the downward adjustment used to estimate the effect the geometric-mean formula would have had. Since 1986, the difference between the CPI-U and CPI-U-RS at the all-items level has typically remained around 0.3 percent per year to 0.4 percent per year. (See chart 2.)

Analysis of results: quantitative impact of selected adjustments. A large proportion of the difference between the CPI-U and CPI-U-RS can be explained by the rental equivalence adjustment applied from 1978 to 1982 and by the group of adjustments made to reflect changes over time to all CPI formulas.

Rental equivalence was first incorporated into the CPI-U in 1983, and its incorporation into the CPI-U-RS from 1978 to 1982 largely explains the sizable difference between the CPI-U and CPI-U-RS during that period. Indeed, as table 2 shows, when the rental equivalence adjustment alone is applied to the CPI-U from 1978 to 1982, the resulting index increases at a rate similar to that for the CPI-U-RS.

In subsequent years (1983–98), most of the difference between the CPI-U and CPI-U-RS was driven by adjustments that can be described as changes to CPI formulas. Among these changes were the elimination of the composite estimator used to measure the cost of shelter before 1995, the improved estimator for rental equivalence in 1995, the elimination of functional form bias for commodity and service categories in 1995 and 1996, and the implementation of the geometric-mean formula in 1999 to account for consumer substitution within CPI item categories. The importance of the changes from 1983 to 1998 can be seen in table 2.

Over the 21-year period, the remaining adjustments made to the CPI-U-RS were relatively small and largely offsetting. Still, these adjustments had the net effect of making the CPI-U-RS *higher* than it otherwise would have been for most years covered by the study.

Analysis of results: effect on major groups

1. Food and beverages. The difference between the CPI-U and CPI-U-RS for the food-and-beverages group is driven by

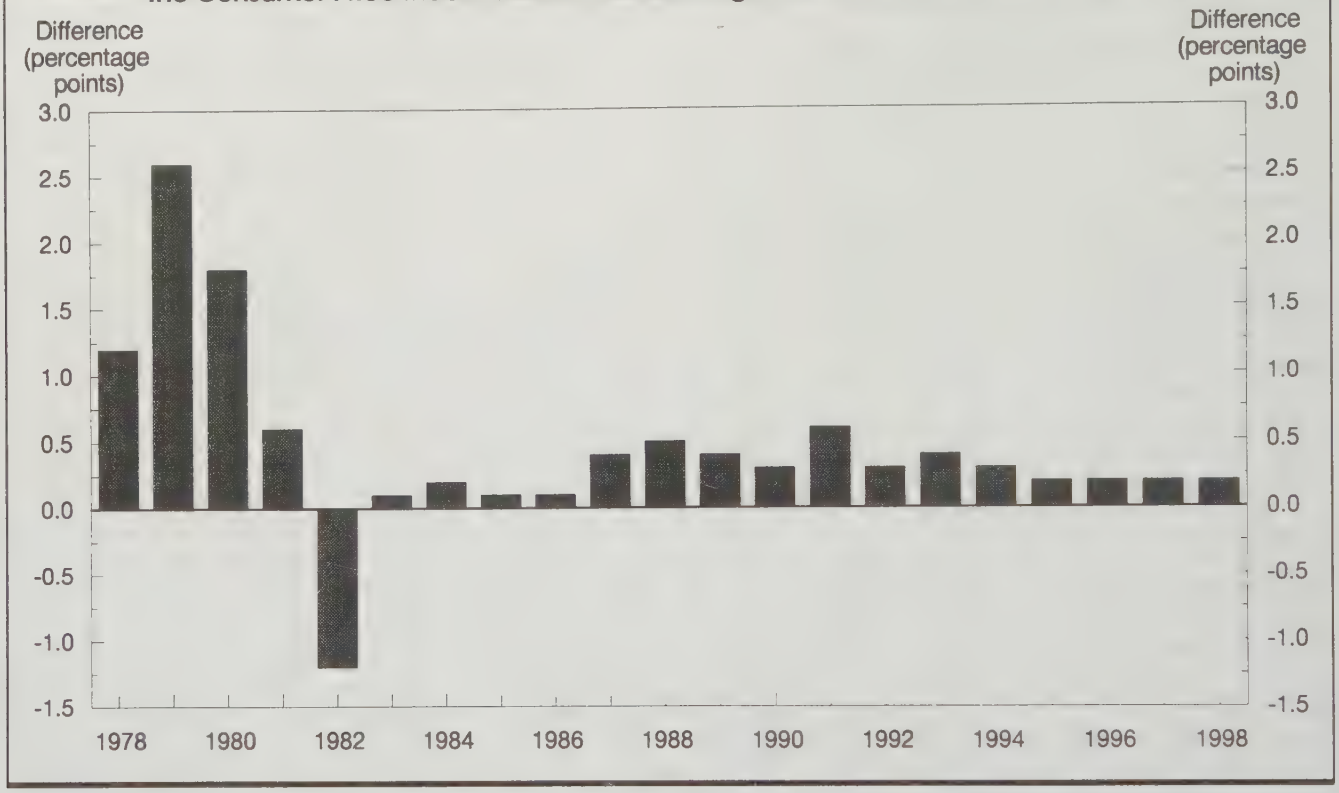
Table 1. CPI for All Urban Consumers (CPI-U) and CPI research series using current methods (CPI-U-RS), all items and major groups, percent changes, December to December, 1978–98

Year	Index	All items	Food and beverages	Housing	Apparel	Transportation	Medical care	Entertainment	Other goods and services	Recreation	Education and Communi-cation
1978	CPI-U	9.0	11.6	10.0	3.1	7.7	8.8	5.7	6.4	–	–
	CPI-U-RS	7.8	11.0	7.4	2.1	7.5	8.8	5.2	6.2	–	–
1979	CPI-U	13.3	10.0	15.2	5.5	18.3	10.1	6.9	7.8	–	–
	CPI-U-RS	10.7	9.5	9.5	4.5	18.5	9.7	6.3	7.5	–	–
1980	CPI-U	12.5	10.1	13.7	6.8	14.6	9.9	9.7	10.1	–	–
	CPI-U-RS	10.7	9.5	9.9	5.8	15.6	10.0	9.0	9.9	–	–
1981	CPI-U	8.9	4.3	10.2	3.5	10.9	12.5	7.2	9.9	–	–
	CPI-U-RS	8.3	3.8	9.8	2.7	10.5	12.2	6.6	9.6	–	–
1982	CPI-U	3.8	3.2	3.6	1.6	1.8	11.0	5.6	12.1	–	–
	CPI-U-RS	5.0	2.7	6.7	.8	2.0	10.8	5.1	11.9	–	–
1983	CPI-U	3.8	2.7	3.5	2.9	3.9	6.4	4.0	7.9	–	–
	CPI-U-RS	3.7	2.1	3.6	1.9	4.2	6.2	3.2	7.7	–	–
1984	CPI-U	3.9	3.8	4.3	2.0	3.1	6.1	4.2	6.0	–	–
	CPI-U-RS	3.7	3.2	4.4	1.0	2.7	5.9	3.7	5.9	–	–
1985	CPI-U	3.8	2.8	4.3	2.8	2.6	6.8	3.1	6.3	–	–
	CPI-U-RS	3.7	2.3	4.4	1.9	2.8	6.5	2.6	6.0	–	–
1986	CPI-U	1.1	3.7	1.7	.9	–5.9	7.7	3.4	5.5	–	–
	CPI-U-RS	1.0	3.3	2.0	.1	–6.2	7.5	2.7	5.3	–	–
1987	CPI-U	4.4	3.5	3.7	4.8	6.1	5.8	4.0	6.1	–	–
	CPI-U-RS	4.0	3.0	3.4	3.8	5.9	5.5	3.4	5.9	–	–
1988	CPI-U	4.4	5.1	4.0	4.7	3.0	6.9	4.6	7.0	–	–
	CPI-U-RS	3.9	4.5	3.6	3.6	2.5	6.6	3.9	6.7	–	–
1989	CPI-U	4.6	5.5	3.9	1.0	4.0	8.5	5.1	8.2	–	–
	CPI-U-RS	4.2	5.0	3.5	–.1	3.7	8.2	4.5	7.9	–	–
1990	CPI-U	6.1	5.3	4.5	5.1	10.4	9.6	4.3	7.6	–	–
	CPI-U-RS	5.8	4.6	4.0	4.1	10.6	9.3	3.6	7.4	–	–
1991	CPI-U	3.1	2.5	3.4	3.4	–1.5	7.9	3.9	8.0	–	–
	CPI-U-RS	2.5	2.0	2.6	2.1	–1.5	7.7	3.4	7.8	–	–
1992	CPI-U	2.9	1.6	2.6	1.4	3.0	6.6	2.8	6.5	–	–
	CPI-U-RS	2.6	1.2	2.1	–.1	3.2	6.5	2.3	6.3	–	–
1993	CPI-U	2.7	2.7	2.7	.9	2.4	5.4	2.8	2.7	–	–
	CPI-U-RS	2.3	2.1	2.4	–.7	2.4	5.1	2.4	2.3	–	–
1994	CPI-U	2.7	2.7	2.2	–1.6	3.8	4.9	2.3	4.2	–	–
	CPI-U-RS	2.4	2.1	1.9	–2.4	4.4	4.8	1.4	3.9	–	–
1995	CPI-U	2.5	2.1	3.0	.1	1.5	3.9	3.3	4.3	–	–
	CPI-U-RS	2.3	1.9	2.8	–1.3	1.3	3.7	2.7	4.2	–	–
1996	CPI-U	3.3	4.2	2.9	–.2	4.4	3.0	2.9	3.6	–	–
	CPI-U-RS	3.1	3.8	2.8	–1.0	4.7	2.9	2.0	3.5	–	–
1997	CPI-U	1.7	1.6	2.4	1.0	–1.4	2.8	1.4	5.2	–	–
	CPI-U-RS	1.5	1.5	2.2	.0	–1.5	2.7	.8	5.1	–	–
1998	CPI-U	1.6	2.3	2.3	–.7	–1.7	3.4	–	8.8	1.2	.7
	CPI-U-RS	1.4	1.9	2.3	–2.4	–1.7	3.2	–	8.2	.7	3
Dec. 1977–Dec. 1998	CPI-U	163.9	142.5	172.5	62.0	136.5	316.3	[1]134.3	301.8	…	…
	CPI-U-RS	141.2	119.6	143.2	29.1	137.7	299.9	[1]107.9	282.5	…	…
Average annual difference, Dec. 1977–Dec. 1998		.45	.49	.57	1.10	–.03	.20	.62	.25	…	…

[1] Entertainment was dropped as a major group in December 1997; number represents percent change from December 1977 through December 1997.

NOTE: Dash indicates not a major group that year. From 1978 to 1998, there were seven major groups in the CPI. In 1998, entertainment was dropped as a major group, and two major groups were added: recreation, and education and communication.

Chart 2. Yearly differences between the Consumer Price Index for All Urban Consumers (CPI–U) and the Consumer Price Index research series using current methods (CPI–U–RS), 1977–98



the geometric-mean adjustments made to the CPI-U-RS; the group was not affected by the other adjustments. The difference between the CPI-U and CPI-U-RS was consistently between 0.5 percent per year and 0.6 percent per year between 1978 and 1994. After 1994, when the food-at-home components of the CPI-U were improved in order to eliminate the functional form bias previously present in them, the average difference between the two measures fell to 0.2 percent per year.

2. Housing. The difference between the CPI-U and the CPI-U-RS in the housing group varies significantly by period. From 1977 to 1982, the difference is explained chiefly by the incorporation into the CPI-U-RS of an estimate for rental equivalence, a method not implemented in the CPI-U until 1983. While the average annual difference between the CPI-U and CPI-U-RS housing measures was 1.9 percent from 1978 to 1982, annual differences were as high as 5.7 percent (in 1979) and as low as –3.1 percent (in 1982).

From 1983 to 1986, the housing group index of the CPI-U-RS was actually rising faster than that of the CPI-U, due to adjustments made to the CPI-U-RS to reflect the elimination of composite estimation and the quality adjustment of shelter units to reflect aging. The annual average difference between the CPI-U and CPI-U-RS from 1983 to 1986 is –0.15 percent per year. For the remaining years (1987–98), the difference between the CPI-U and CPI-U-RS housing measures was consistently positive, but fairly small, averaging between 0.3 percent per year and 0.4 percent per year.

3. Apparel. From 1978 to 1990, the annual difference between the CPI-U and CPI-U-RS apparel indexes was consistently around 1.0 percent. This substantial gap reflects the large downward adjustment to the CPI-U-RS because of the geometric-mean formula, which has a substantial impact on the apparel category. The effect is partially offset by an upward adjustment of about 0.4 percent per year to reflect an estimate of the retroactive influence of hedonic-based quality adjustments implemented in the CPI-U apparel indexes in 1991. After 1991, with only the geometric-mean adjustment affecting the apparel category of the CPI-U-RS, the average annual difference between the CPI-U and CPI-U-RS apparel indexes was 1.4 percent.

4. Transportation. The annual average difference between the CPI-U and CPI-U-RS transportation components between 1978 and 1998 was near zero, reflecting several changes that roughly offset each other. Specifically, while downward adjustments were made to the CPI-U-RS to incorporate the effects of changes in the quality of used cars and the effects of

the geometric-mean formula, net upward adjustments resulted from the deletion from the CPI-U-RS of the index for automobile finance charges and from an upward adjustment based on the backing out of a prior adjustment for changes in quality for mandated pollution controls made to the CPI-U over the period. While annual changes in the CPI-U and CPI-U-RS transportation measures were usually within one-half percent of each other, the CPI-U-RS transportation measure was a full percentage point *higher* than that of the CPI-U in 1980, a year in which the CPI-U-RS reflected a large upward adjustment to remove the aforesaid previous downward adjustment in the measurement of pollution-related changes in the quality of 1981-model automobiles.

5. Medical care. The average annual difference between the CPI-U and CPI-U-RS for the medical care component was 0.2 percent per year. This relatively small difference primarily reflects the fact that, while a downward adjustment to the CPI-U-RS for medical care commodities was made to reflect the use of geometric means, the geometric-mean formula is not utilized for most medical care services in the calculation of the CPI-U.

6. Entertainment. The annual difference between the CPI-U and CPI-U-RS for the major group of entertainment averaged 0.6 percent from 1978 to 1997, reflecting the downward adjustment made to the CPI-U-RS from the estimate of the likely effect of the geometric-mean formula.

7. Other goods and services. The annual average difference between the CPI-U and CPI-U-RS for the other-goods-and-services component between 1978 and 1998 was 0.25 percent, again reflecting the downward adjustment made to the CPI-U-RS from the estimate of the effect of the geometric-mean formula.

BECAUSE THE CPI-U DOES NOT INCORPORATE methodological changes retroactively, the Bureau of Labor Statistics developed the CPI-U-RS for researchers who are interested in using current and consistent methods of estimating consumer inflation over the 1978–98 period. The CPI-U-RS provides a somewhat different picture of inflation from 1978 to 1998 by including an estimate of most improvements made over time to the CPI back to 1978. Users of CPI data can thus gain a new perspective on inflation and on the performance of the U.S. economy between the years 1978 and 1998.

Table 2. Estimated effect on annual inflation rate of specific methodological changes, selected periods

Index or type of effect	Average annual rate			
	1978–82	1983–86	1987–97	1998
CPI-U	9.46	3.15	3.50	1.61
Effect of incorporating an estimate of rental equivalence from 1978 to 1982	–.86	...	...	...
Effect of incorporating changes made to CPI formulas	–.28	–.26	–.41	–.23
Effect of all other changes	+.14	+.13	+.06	+.00
CPI-U-RS	8.46	3.02	3.15	1.38

Researchers need to be aware of the limitations of the CPI-U-RS, including the fact that adjustments made to the measure from 1978 forward typically reflect extrapolations of estimates made over later, and much shorter, periods. In addition, the CPI-U-RS is not adjusted for many improvements made to the CPI over the past 21 years, such as the January 1997 change to improve the pricing of hospital services. Nonetheless, for some purposes, the CPI-U-RS can serve as a valuable proxy for what the CPI-U would have been had current (1999) methods been in place from 1978 onward.

It is important to note that the CPI-U-RS is subject to revision. When an improvement is made to the CPI and an effect of that change can be estimated, the CPI-U-RS (unlike the CPI-U) will be revised so that earlier years incorporate that improvement. In addition, if a better method of adjusting the CPI-U-RS for past improvements is found, the CPI-U-RS will be revised to reflect the new technique.

The CPI-U-RS will be updated periodically in the *CPI Detailed Report.* To assist users, all-item indexes for the CPI-U-RS are available on request.[33] In addition, all-item indexes are available for users who would like to link the CPI-U-RS to the CPI-U-X1 for periods prior to 1978.[34] □

Notes

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[1] Historical CPI indexes are occasionally revised when data-collection or data-processing errors are discovered. Methodological improvements, however, do not result in revisions to the data.

[2] Researchers outside the Bureau have attempted to estimate what the CPI would have been had improvements to it been in place earlier. (See, for example, Dean Baker, *Getting Prices Right: A Methodologically Consistent Consumer Price Index, 1953–94* (Washington, DC, Economic Policy Institute, 1996); and Richard Bavier, *Updating the poverty thresholds with expenditure data*, poverty measurement working paper (Bureau of the Census, 1998).) Others, such as the Congressional Budget Office and Council of Economic Advisers, have estimated the effect of recent improvements to the CPI on the projected (future) rate of inflation. General estimates of bias in the CPI relative to

a cost-of-living index have also been made by many groups and individuals, including the Advisory Commission to Study the Consumer Price Index (widely known as the Boskin Commission), the Congressional Budget Office, and the Federal Reserve Board.

[3] Because of limitations of available data, adjustments for periods prior to the 1987 revision of the CPI often had to be made at a slightly higher level of aggregation, roughly corresponding to the level of a CPI expenditure class.

[4] As noted subsequently, CPI expenditure weight updates were not treated as methodological improvements in the construction of the CPI-U-RS.

[5] The development of such a broader historical research series was one recommendation of the Boskin Commission.

[6] The CPI-UI-X1 has been used widely as an alternative measure of historical consumer inflation. For a more detailed discussion of rental equivalence, see Robert Gillingham and Walter Lane, "Changing the treatment of shelter costs for homeowners in the CPI," *Monthly Labor Review*, June 1982, pp. 9–14; and "Changing the homeownership component of the Consumer Price Index to rental equivalence," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, January 1983), pp. 1–7.

[7] For more details on the adjustment of used-car prices for changes in the quality of the cars, see Jeffrey H. Kellar, "New methodology reduces importance of used cars in the revised CPI" *Monthly Labor Review*, December 1988, pp. 34–36.

[8] Specifically, the monthly price relatives of the rent and owners' equivalent rent indexes were multiplied by $1.003^{1/12}$. The result of this adjustment is that the 12-month change in the item category within the CPI-U-RS is 0.3 percent higher than the 12-month change in the CPI-U. Other adjustments set forth in this article can be similarly interpreted.

[9] For a description of adjustments to reflect the aging of the rental stock, see Walter F. Lane, William C. Randolph, and Stephen A. Berenson, "Adjusting the CPI shelter index to compensate for effect of depreciation," *Monthly Labor Review*, October 1988, pp. 34–37.

[10] For a more detailed description of the improved method used for adjusting apparel prices for changes in quality, see Paul R. Liegey, Jr., "Apparel price indexes: effects of hedonic adjustment," *Monthly Labor Review*, May 1994, pp. 38–45.

[11] For more details, see "Improvements to CPI procedures: prescription drugs," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, October 1994), p. 4.

[12] The CPI-U-XL was calculated from 1991 to 1997 in order to give researchers an opportunity to compare differences between a Laspeyres type of index and an experimental CPI that used geometric means (CPI-U-XG), holding constant other changes in CPI methods during that period.

[13] For more information on the 1995 shelter changes, see Paul A. Armknecht, Brent R. Moulton, and Kenneth J. Stewart, *Improvements to the food-at-home, shelter and prescription drug indexes in the U.S. Consumer Price Index*, working paper 263 (Bureau of Labor Statistics, February 1995); and "Improvements in estimating the shelter indexes in the CPI," *Consumer Price Index Detailed Report*, October 1994, pp. 5–6.

[14] See "Using a hedonic model in the CPI to adjust personal computer prices for changes in quality," *Consumer Price Index Detailed Report*, June 1997, p. 18. From 1987 to 1997, personal computers were included in the CPI item category called "information-processing equipment" (IPE). The adjustments made to the CPI-U-RS reflect an estimate each year of the number of personal-computer prices in the IPE sample during that time.

[15] See Walter Lane, "Changing the item structure of the Consumer Price Index," *Monthly Labor Review*, December 1996, pp. 18–25.

[16] See Brent R. Moulton, Timothy J. LaFleur, and Karin E. Moses, *Research on Improved Quality Adjustment in the CPI: The Case of Televisions*, paper presented at the Fourth Meeting of the International Working Group on Price Indices, Washington, DC, Apr. 22–24, 1999.

[17] See, for example, Marshall Reinsdorf, *Price dispersion, seller substitution, and the U.S. CPI*, working paper 252 (Bureau of Labor Statistics, March 1994).

[18] A brief description of the improved procedures for the food-at-home categories of the CPI can be found in "Improving CPI sample rotation procedures," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, October 1994), pp. 7–8. A discussion of the extension of this methodology to other commodities and services can be found in "Extending the improvement in CPI sample rotation procedures," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, June 1996), pp. 9–10. A change to eliminate a similar functional form bias resulting from certain item substitutions can be found in "Improving CPI item substitution procedures," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, July 1996), pp. 8–9.

[19] The geometric-mean formula will be used within item categories that make up 61 percent of total consumer spending in the CPI-U; the Laspeyres formula will continue to be used in the remaining categories. (See Kenneth V. Dalton, John S. Greenlees, and Kenneth J. Stewart, "Incorporating a geometric mean formula in the Consumer Price Index," *Monthly Labor Review*, October 1998, pp. 3–7.)

[20] Brent R. Moulton, Karin Moses, and Claire McAnaw Gallagher, "Formula bias in the CPI: Estimated impact of seasoning," undated internal memorandum.

[21] See "The treatment of mandated pollution control measures in the CPI," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, September 1998), pp. 4–7. The author of the piece, Dennis Fixler, notes that the CPI is a subindex of a cost-of-living index in that the CPI is defined to include only market transactions, although it is conditional on nonmarket factors. Accordingly, changes in the quality of these factors—such as the environment—are generally deemed outside of the scope of the CPI.

[22] See Greenlees and Mason for a description of improvements made with the 1998 and previous CPI revisions.

[23] See, for example, "Improvements in CPI procedures," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, March 1990, August 1992), pp. 3–4 each issue.

[24] *Handbook of Methods* (Bureau of Labor Statistics, April 1997), chapter 17, pp. 187–88.

[25] Internal BLS memo from Walter F. Lane to Stephen G. Wright, Nov. 20, 1991, on "New Pricing Guidelines for Airline Fares."

[26] See "Improvements in CPI procedures: sample augmentation," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, February 1992), p. 3.

[27] See "Improvements to CPI procedures: lodging while out of town," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, March 1992), p. 4.

[28] See Elaine M. Cardenas, "Revision of the CPI hospital services component," *Monthly Labor Review*, December 1996, pp. 40–48.

[29] Robert Cage, "New methodology for selecting outlet samples," *Monthly Labor Review*, December 1996, pp. 49–61.

[30] Frank Ptacek and Robert M. Baskin, "Revision of the CPI housing sample and estimators," *Monthly Labor Review*, December 1996, pp. 31–39.

[31] "Changes to the treatment of utility rebates," *Consumer Price Index Detailed Report* (Bureau of Labor Statistics, July 1998), p. 5.

[32] In a December 1998 announcement, the Bureau estimated that a hypothetical 1989 update would have reduced the CPI's subsequent growth rate, but that later updates would have had smaller or countervailing effects. The Bureau suggested that more frequent updates would have a small upward effect on the index in some future years and a small downward effect in other years.

[33] Call (202) 606–7000.

[34] The CPI-U-X1 was an experimental measure of the all-items index using an estimate of rental equivalence from 1967 through 1982.

Union membership by State

In 1998, 13.9 percent of all employed nonagricultural wage and salary workers in the United States were union members, according to results from the Current Population Survey. Nineteen States had membership rates above the national average, while 30 States and the District of Columbia had lower rates.

Hawaii, New Jersey, and New York had the highest rates of union membership, all 22 percent or higher. These States, along with Michigan, have been among the five most unionized States since at least 1995. Mississippi, North Carolina, and South Carolina had the lowest rates (between 4.2 and 5.6 percent), as they have for the past 4 years.

California (2.2 million), New York (1.9 million), and Illinois (1.0 million) were the States with the greatest number of union members. More than half the union members in the United States lived in seven States, although those States accounted for only 38 percent of nonagricultural wage and salary employment nationally.

Percent of nonagricultural wage-and-salary worker union members, by State, 1998 annual averages

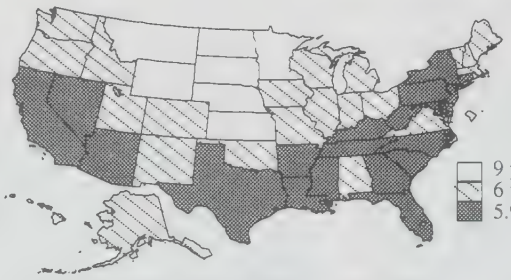
United States	13.9	Missouri	13.7
Alabama	9.7	Montana	13.9
Alaska	20.4	Nebraska	10.3
Arizona	6.5	Nevada	17.0
Arkansas	6.2	New Hampshire	11.0
California	16.1	New Jersey	22.0
Colorado	9.1	New Mexico	9.4
Connecticut	17.5	New York	25.4
Delaware	13.6	North Carolinia	4.2
District of Columbia	13.5	North Dakota	9.1
Florida	6.7	Ohio	19.0
Georgia	7.4	Oklahoma	8.6
Hawaii	26.5	Oregon	16.1
Idaho	7.8	Pennsylvania	16.3
Illinois	18.9	Rhode Island	19.0
Indiana	16.2	South Carolina	4.5
Iowa	12.5	South Dakota	6.4
Kansas	7.9	Tennessee	7.9
Kentucky	13.1	Texas	5.9
Louisiana	7.8	Utah	6.8
Maine	12.6	Vermont	9.4
Maryland	14.1	Virginia	6.8
Massachusetts	15.9	Washington	21.2
Michigan	21.6	West Virginia	12.6
Minnesota	18.8	Wisconsin	18.7
Mississippi	5.6	Wyoming	9.6

Multiple jobholding, by State

Current Population Survey data for 1998 show considerable variation in multiple jobholding rates around the national average of 6 percent, as well as some rather clear geographic patterns. Of the 11 States with the highest rates, 6 are located in the Midwest and 4 are in the West. Of the 10 States with the lowest rates, 6 are in the South and 3 are in the Northeast. Similar patterns were observed in recent years.

Overall, 28 States and the District of Columbia had multiple jobholding rates above the U.S. average, while 19 States had lower rates. North Dakota registered the highest rate, 10.8 percent. Montana and Minnesota also had rates above 10 percent. In fact, 1998 was the fifth consecutive year that Minnesota has had a double-digit multiple jobholding rate. Louisiana recorded the lowest rate, 3.8 percent, with Mississippi, New York, North Carolina, and Texas also having rates below 5 percent. This marks the third time in the last 4 years that Louisiana has had the lowest multiple jobholding rate of all the States.

Multiple jobholding rates by State, 1998 annual averages



Montana and Alaska had the largest increases in multiple jobholding from the prior year, 0.9 percentage point. The largest over-the-year declines were recorded in Arkansas and Nebraska, –1.6 and –1.5 percentage points, respectively. The U.S. rate edged down by 0.1 percentage point from 1997, and has ranged from 5.9 to 6.2 percent in the past 5 years. □

"Regional trends" is prepared in the Division of Local Area Unemployment Statistics, Bureau of Labor Statistics. More information on these topics is on the Internet at **http://www.stats.bls.gov/lauhome.htm** or call (202) 606–6392.

Business cycles then and now

In his introduction to a *Journal of Economic Perspectives* symposium on business cycles, J Bradford De Long presented a straightforward comparison of the long expansions of the post-World War II era. Several of the indicators he chose to characterize these long expansions as they reached the 30-quarters mark will be familiar to readers of the *Review*:

Indicator	*1960s*	*1980s*	*1990s*
Annual percent growth in employment	2.1	2.5	1.5
Annual change in unemployment rate	–.3	–.7	–.3
Starting unemployment rate (percent)	6.3	10.7	6.6
Ending unemployment rate (percent)	3.6	5.3	4.5
Underlying trend productivity growth rate (percent)	–2.9	.7	1.2

In the face of the fact that the long expansions of the 1960s and 1980s, like all the expansions before them, ended in recessions "in which real, nominal, and financial variables follow patterns that bear a close resemblance to the ideal type of 'recession'," De Long notes that the business cycle seems to have persisted "with at least qualitative continuity in its mechanism and effects."

In her symposium paper, Christina D. Romer suggests an even longer period of historical continuity, both qualitative and quantitative: "Major real macroeconomic indicators have not become dramatically more stable between the pre-World War I and post-World War II eras, and recessions have become only slightly less severe on average." One measure—duration of recession—may actually have gone up by a month from an average of 9.7 months for the nine pre-World War I recessions Romer analyzed to 10.7 months for the nine recessions since the end of World War II. On the other hand, the duration of expansions has increased even more, rising from an average 34 months before the First War to 51.5 months since the Second.

Job loss and older men

Involuntary job loss has lasting effects on the employment of older men, according to Sewin Chan and Ann Huff Stevens. In *Job Loss and Retirement Behavior of Older Men*, a working paper from the National Bureau of Economic Research, they come to this conclusion based on an analysis of 1984 to 1996 employment data from the Health and Retirement Study on men 50 and older who had lost a job due to a layoff or business closing.

Chan and Stevens found that men in their fifties have a three-quarters chance of re-employment within 2 years of losing a job, while for a 62-year-old, the chance is less than one-third. Moreover, the jobs that older men obtain after displacement can be short-lived. While three-quarters of job losers in their fifties find another job at some point within 2 years, only 61 percent of them are actually employed at the end of the 2 years, based on Chan and Stevens' estimates.

The researchers also compared those who had lost a job between 1984 and 1996 and those who had not. They found that for 55-year-olds, only half were working 1 year after the loss of a job, whereas 95 percent of the nondisplaced men were working.

The gap between the employment-population ratios of men who have been displaced in their fifties and those who have not persists for at least 7 years, say Chan and Stevens. The retirement of nondisplaced workers accounts for some of the reduction in the gap over time.

Wage gaps and segregation

During the past few decades, labor economists often have investigated differences in wages by sex, race, and ethnicity. These differences are explored with a new data set in a recent NBER working paper, *Why are Racial and Ethnic Wage Gaps Larger for Men than for Women? Exploring the Role of Segregation Using the New Worker-Establishment Characteristics Database*, by Kimberly Bayard, Judith Hellerstein, David Neumark, and Kenneth Troske. They note that wage gaps by race and ethnicity have been larger for men than for women, and they study to what extent the larger gaps for men can be explained by segregation. Their results suggest that employment segregation contributes in an important way to black-white and Hispanic-white wage differentials for men.

The data examined by the authors is their New Worker-Establishment Characteristics Database (NWECD), constructed with matched data from the 1990 Decennial Census and the 1990 Standard Statistical Establishment List. After restrictions for workers' hours and the size of establishment, the sample for this study of segregation consisted of 637,718 workers in 32,931 establishments out of the full NWECD sample of 1,056,653 workers matched to 153,291 establishments.

Bayard, Hellerstein, Neumark, and Troske analyzed segregation along four dimensions: occupation, industry, establishment, and job cell (occupation within an employer). They found that a higher degree of segregation between Hispanic men and white men than between Hispanic women and white women accounts for most of the larger Hispanic-white wage differential for men. They also estimated that segregation contributed to about one-third to one-half of the larger black-white wage differential for men. □

Government downsizing

Downsizing the Federal Government: The Management of Public Sector Workforce Reductions. By Vernon Dale Jones. Armonk, NY, M.E. Sharpe, Inc., 1998. 296 pp. $76.95, hardcover; $23.95, paperback.

Downsizing. The word may not appear in older dictionaries, but workers in both private and public organizations know the term. Since the 1980s, large organizations have used the term when reducing their work forces, and as its popularity spread, a similar concept took hold in the Federal Government.

Before downsizing existed in popular vocabulary, Federal workers were familiar with the term "RIF" which stands for reduction in force. In theory, downsizing is different than the normal workforce reductions (or RIF) that various Federal agencies have faced during their histories. Traditionally, reductions in staffs at Federal agencies were the result of changes in the agencies' missions or as a result of reduced budgets that forced agencies to reduce their workforce. Agencies lowered their personnel levels because of cutbacks in work, such as the reductions that occurred in NASA when the manned space program experienced budget cuts.

While downsizing is also a plan for lowering personnel costs, this staff reduction is more designed to increase the agency's efficiency by maintaining the agency's core responsibilities while lowering its staffing level. The challenge of downsizing is not merely to reduce staff, but to reduce staff as a means to achieve some greater goal, usually defined as some improvement of agency productivity.

Downsizing the Federal Government examines the experiences of three Federal agencies, Defense Logistics Agency, Bureau of Reclamation, and Food and Drug Administration, as a means of examining downsizing in the Federal Government. In the book, Jones approaches the subject as an impartial observer conducting a scientific study—defining the problem, developing a theoretical model, researching the agencies through literature reviews and personal interviews, and developing conclusions based on his research.

In each of the three agencies reviewed in the book, Jones outlines the downsizing strategies used by the agency. He begins with a brief history of each agency, followed by the agency's organizational environment at the start of the downsizing effort. One of his conclusions is that an agency's history of reorganizations affects its reaction to downsizing. Agencies which had undergone restructuring prior to the present initiative, such as the Defense Logistics Agency, were able to adapt more readily to organizational changes. At the same time, these past experiences lessened the pain but did not remove it, and managers still struggled to complete the implementation process.

The personal interviews Jones conducted at each agency are a major asset of the book. He purposely chose to speak with agency executives and middle managers to gain their perspective on their agencies' downsizing implementation strategies. Many of the executives and middle managers shared the view that the downsizing was an emotional event. They expressed concerns about workloads that did not decrease with the reorganizations and about managers who had trouble adapting to the new organizational structures. Towards the end of the book, the author summarizes his conclusions on management's role in downsizing and lists those management practices that seemed to have the most positive affect on the process.

Downsizing the Federal Government is one of many publications that have been published both inside and outside the government on this subject. The General Accounting Office's (GAO) report, *Federal Downsizing: Better Workforce and Strategic Planning Could Have Made Buyouts More Effective* (GAO/GGD-96–62), covers much of the same information with similar conclusions. While the GAO report lacks the personal interviews and a list of successful management practices, it gives a better summary of the successes and shortcomings of downsizing. The GAO report also reveals that standard measurement of agencies success with downsizing may be misleading. It appears some agencies tried to meet the National Performance Review's goals without making meaningful changes to their structures with different techniques, including reclassifying managers to nonmanagement positions without changing their salary grades. Jones does not report any subterfuges such as these in his book.

Both documents speak for the need for increased strategic planning by agencies and identify lack of planning as a shortfall of the reinventing process. Interestingly, neither Jones nor the GAO determined whether downsizing is reaching its goals. While the process has been successful at lowering the total number of Federal civilian workers, the question as to whether downsizing is making Federal civilian workers more productive or effective is left unresolved. Similarly, while the employee buyouts made the restructuring more humane, it is unclear whether the buyouts furthered the goals of the agencies.

In his introduction, Jones identifies his audience as both managers and researchers interested in organizational theory, although there is less theory in the book and more discussion of his research methodology. It is possible the author felt that this style made the book appear more "scientific" and impartial.

Unfortunately, Jones concludes with recommendations similar to those proposed by other business theorists. He finds that managers should be less controlling and practice greater human resource skills, and that downsizing does not come without costs to an agency's effectiveness. Despite the extensive research, he was unable to recommend any

creative solutions to the problems identified by the agency managers. While the personal interviews set this book apart from other reports on downsizing, the well-written GAO report more clearly explains the successes and failures of the current downsizing effort. Readers interested in Federal Government downsizing efforts may wish to start with that report before tackling Jones's research.

—Michael Wald
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Environmental issues

The International Yearbook of Environmental and Resource Economics 1997/1998: A Survey of Current Issues. Edited by Henk Folmer and Tom Tietenberg. Lyme, NH, Edward Elgar Publishing Co., 1997, 255 pp.

Within the pages of this yearbook, the breadth of environmental and resource economics is explored. The collection of essays, written by the field's top researchers, identifies the staid past of the discipline, while bringing to the forefront new ideas, constructs, and analytical methods. The reader is made aware that issues and policies surrounding the environment entail (and require) more than externalities, exploitation, and valuation. While the collection is designed to help resource economists stay abreast in their field, others interested in environmental policy will be enriched by the topics and issues addressed. The spectrum of growth in the discipline is obvious in the essays included in this collection—property rights, tax interactions, sustainability, biodiversity, nonpoint pollution control, resource benefit identification and international trade.

The collection begins with Bromley's assertion that "environmental problems are property rights problems." The issue of property cannot cōme into play unless there is an authority system in place to influence behavior through norms. The difficulty, and if truth be told, key insight into environmental issues, which Bromley outlines, is that society and its authority systems change and evolve. The same recognition is not given property rights. Bromley aptly describes the relationship between the two through a discussion of the Endangered Species Act. This chapter provides a solid background from which discussion of issues involving the environment may begin and an eventual understanding reached.

The five middle essays run the gamut of environmental issues. Goulder broaches the topic of tax interaction through the relationship between environmental taxes and the means of production (labor, capital, and natural resources). Sustainability and the relationship between consumption patterns and national wealth are the subject of Hartwick's essay. Moran and Pearce address biodiversity with regards to land use change. The economic value of a diverse environment is based on the loss of the biodiverse environment. All value, not just use-value must be considered. Shortle and Abler argue that sources of nonpoint pollution (small businesses and households) should be held accountable for environmental quality just as are other large entities that manufacture or emit pollution (for example, pesticide and automobile manufacturers) as a by-product. The quality of the environment will continue to be adversely affected if all sources of pollution are not regulated and controlled; this includes large industries and factories as well as the landscape company that sprays pesticides on your neighbor's lawn. While suggestions for pollution control mechanisms are given, and policy recommendations are made, it appears that information and education campaigns continue as the most cost effective. A summary and overview of research on nonmarket valuation of natural resources is the focus of Smith's essay. Outlining where the field of environmental and resource economics has been in this area, Smith suggests new research methods in the guise of calibration and conjoint analysis as a way of changing the focus and direction of environmental and economic policies.

The concluding essay on the relationship between environmental policy and international trade by Ulph brings one of the discipline's major debates to the reader's attention. More than ever in today's global marketplace, the economic policies (including international trade) of one country affect the economy and environment of another. Production and consumption patterns may be altered. Trade policy may be used as an enforcer for environmental agreements. The need to understand the issues and concerns raised in the previous sections culminate here, as international trade policies become environmental policies.

It is clear that the editors of this collection wanted to challenge the reader's traditional view of the environment and the policies enacted in protection of our natural resources from the outset. Their goal has been met. The reader comes away with a deeper understanding of the environment and the policies designed to protect our resources. As an annual publication, *The International Yearbook of Environmental and Resource Economics* holds promise.

—Krissa Wrigley
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This section of the *Review* presents the principal statistical series collected and calculated by the Bureau of Labor Statistics: series on labor force; employment; unemployment; labor compensation; consumer, producer, and international prices; productivity; international comparisons; and injury and illness statistics. In the notes that follow, the data in each group of tables are briefly described; key definitions are given; notes on the data are set forth; and sources of additional information are cited.

General notes

The following notes apply to several tables in this section:

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect on the data of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might prevent short-term evaluation of the statistical series. Tables containing data that have been adjusted are identified as "seasonally adjusted." (All other data are not seasonally adjusted.) Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years.

Seasonally adjusted data appear in tables 1–14, 16–17, 39, and 43. Seasonally adjusted labor force data in tables 1 and 4–9 were revised in the February 1999 issue of the *Review*. Seasonally adjusted establishment survey data shown in tables 1, 12–14 and 16–17 were revised in the July 1998 *Review* and reflect the experience through March 1998. A brief explanation of the seasonal adjustment methodology appears in "Notes on the data."

Revisions in the productivity data in table 45 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month-to-month and quarter-to-quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All-Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data—such as the "real" earnings shown in table 14—are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current-dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of $3 and a current price index number of 150, where 1982 = 100, the hourly rate expressed in 1982 dollars is $2 ($3/150 x 100 = $2). The $2 (or any other resulting values) are described as "real," "constant," or "1982" dollars.

Sources of information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. Definitions of each series and notes on the data are contained in later sections of these Notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods*, Bulletin 2490. Users also may wish to consult *Major Programs of the Bureau of Labor Statistics*, Report 919. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule appearing on the back cover of this issue.

More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in the Bureau's monthly publication, *Employment and Earnings*. Historical unadjusted and seasonally adjusted data from the household survey are available on the Internet:

http://stats.bls.gov/cpshome.htm

Historically comparable unadjusted and seasonally adjusted data from the establishment survey also are available on the Internet:

http://stats.bls.gov/ceshome.htm

Additional information on labor force data for areas below the national level are provided in the BLS annual report, *Geographic Profile of Employment and Unemployment*.

For a comprehensive discussion of the Employment Cost Index, see *Employment Cost Indexes and Levels, 1975–95*, BLS Bulletin 2466. The most recent data from the Employee Benefits Survey appear in the following Bureau of Labor Statistics bulletins: *Employee Benefits in Medium and Large Firms; Employee Benefits in Small Private Establishments;* and *Employee Benefits in State and Local Governments*.

More detailed data on consumer and producer prices are published in the monthly periodicals, *The CPI Detailed Report* and *Producer Price Indexes*. For an overview of the 1998 revision of the CPI, see the December 1996 issue of the *Monthly Labor Review*. Additional data on international prices appear in monthly news releases.

Listings of industries for which productivity indexes are available may be found on the Internet:

http://stats.bls.gov/iprhome.htm

For additional information on international comparisons data, see *International Comparisons of Unemployment*, BLS Bulletin 1979.

Detailed data on the occupational injury and illness series are published in *Occupational Injuries and Illnesses in the United States, by Industry*, a BLS annual bulletin.

Finally, the *Monthly Labor Review* carries analytical articles on annual and longer term developments in labor force, employment, and unemployment; employee compensation and collective bargaining; prices; productivity; international comparisons; and injury and illness data.

Symbols

n.e.c. = not elsewhere classified.
n.e.s. = not elsewhere specified.
p = preliminary. To increase the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.
r = revised. Generally, this revision reflects the availability of later data, but also may reflect other adjustments.

Comparative Indicators

(Tables 1–3)

Comparative indicators tables provide an overview and comparison of major BLS statistical series. Consequently, although many of the included series are available monthly, all measures in these comparative tables are presented quarterly and annually.

Labor market indicators include employment measures from two major surveys and information on rates of change in compensation provided by the Employment Cost Index (ECI) program. The labor force participation rate, the employment-to-population ratio, and unemployment rates for major demographic groups based on the Current Population ("household") Survey are presented, while measures of employment and average weekly hours by major industry sector are given using nonfarm payroll data. The Employment Cost Index (compensation), by major sector and by bargaining status, is chosen from a variety of BLS compensation and wage measures because it provides a comprehensive measure of employer costs for hiring labor, not just outlays for wages, and it is not affected by employment shifts among occupations and industries.

Data on **changes in compensation, prices, and productivity** are presented in table 2.

Measures of rates of change of compensation and wages from the Employment Cost Index program are provided for all civilian nonfarm workers (excluding Federal and household workers) and for all private nonfarm workers. Measures of changes in consumer prices for all urban consumers; producer prices by stage of processing; overall prices by stage of processing; and overall export and import price indexes are given. Measures of productivity (output per hour of all persons) are provided for major sectors.

Alternative measures of wage and compensation rates of change, which reflect the overall trend in labor costs, are summarized in table 3. Differences in concepts and scope, related to the specific purposes of the series, contribute to the variation in changes among the individual measures.

Notes on the data

Definitions of each series and notes on the data are contained in later sections of these notes describing each set of data.

Employment and Unemployment Data

(Tables 1; 4–20)

Household survey data

Description of the series

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 50,000 households selected to represent the U.S. population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

Employed persons include (1) all those who worked for pay any time during the week which includes the 12th day of the month or who worked unpaid for 15 hours or more in a family-operated enterprise and (2) those who were temporarily absent from their regular jobs because of illness, vacation, industrial dispute, or similar reasons. A person working at more than one job is counted only in the job at which he or she worked the greatest number of hours.

Unemployed persons are those who did not work during the survey week, but were available for work except for temporary illness and had looked for jobs within the preceding 4 weeks. Persons who did not look for work because they were on layoff are also counted among the unemployed. **The unemployment rate** represents the number unemployed as a percent of the civilian labor force.

The **civilian labor force** consists of all employed or unemployed persons in the civilian noninstitutional population. Persons **not in the labor force** are those not classified as employed or unemployed. This group includes discouraged workers, defined as persons who want and are available for a job and who have looked for work sometime in the past 12 months (or since the end of their last job if they held one within the past 12 months), but are not currently looking, because they believe there are no jobs available or there are none for which they would qualify. The **civilian noninstitutional population** comprises all persons 16 years of age and older who are not inmates of penal or mental institutions, sanitariums, or homes for the aged, infirm, or needy. The **civilian labor force participation** rate is the proportion of the civilian noninstitutional population that is in the labor force. The **employment-population ratio** is employment as a percent of the civilian noninstitutional population.

Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the intercensal years. These adjustments affect the comparability of historical data. A description of these adjustments and their effect on the various data series appears in the Explanatory Notes of *Employment and Earnings*.

Labor force data in tables 1 and 4–9 are seasonally adjusted. Since January 1980, national labor force data have been seasonally adjusted with a procedure called X-11 ARIMA which was developed at Statistics Canada as an extension of the standard X-11 method previously used by BLS. A detailed description of the procedure appears in the X-11 *ARIMA Seasonal Adjustment Method*, by Estela Bee Dagum (Statistics Canada, Catalogue No. 12-564E, January 1983).

At the beginning of each calendar year, historical seasonally adjusted data usually are revised, and projected seasonal adjustment factors are calculated for use during the January–June period. The historical seasonally adjusted data usually are revised for only the most recent 5 years. In July, new seasonal adjustment factors, which incorporate the experience through June, are produced for the July–December period, but no revisions are made in the historical data.

Revisions in the household survey

Data beginning in 1999 are not strictly comparable with data for 1998 and earlier years because of the introduction of revised population controls. Additional information appears in the February 1999 issue of *Employment and Earnings*.

FOR ADDITIONAL INFORMATION on national household survey data, contact the Division of Labor Force Statistics: (202) 606–6378.

Establishment survey data

Description of the series

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by about 390,000 establishments representing all industries except agriculture. Industries are classified in accordance with the 1987 *Standard Industrial Classification (SIC) Manual*. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

An **establishment** is an economic unit which produces goods or services (such as a factory or store) at a single location and is engaged in one type of economic activity.

Employed persons are all persons who received pay (including holiday and sick pay) for any part of the payroll period including the 12th day of the month. Persons holding more than one job (about 5 percent of all persons in the labor force) are counted in each establishment which reports them.

Production workers in manufacturing include working supervisors and nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 11–16 include production workers in manufacturing and mining;

construction workers in construction; and nonsupervisory workers in the following industries: transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and services. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

Earnings are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special payments. **Real earnings** are earnings adjusted to reflect the effects of changes in consumer prices. The deflator for this series is derived from the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Hours represent the average weekly hours of production or nonsupervisory workers for which pay was received, and are different from standard or scheduled hours. **Overtime hours** represent the portion of average weekly hours which was in excess of regular hours and for which overtime premiums were paid.

The **Diffusion Index** represents the percent of industries in which employment was rising over the indicated period, plus one-half of the industries with unchanged employment; 50 percent indicates an equal balance between industries with increasing and decreasing employment. In line with Bureau practice, data for the 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are unadjusted. Data are centered within the span. Table 17 provides an index on private nonfarm employment based on 356 industries, and a manufacturing index based on 139 industries. These indexes are useful for measuring the dispersion of economic gains or losses and are also economic indicators.

Notes on the data

Establishment survey data are annually adjusted to comprehensive counts of employment (called "benchmarks"). The latest adjustment, which incorporated March 1997 benchmarks, was made with the release of May 1998 data, published in the July 1998 issue of the *Review*. Coincident with the benchmark adjustment, historical seasonally adjusted data were revised to reflect updated seasonal factors and refinement in the seasonal adjustment procedures. Unadjusted data from April 1997 forward and seasonally adjusted data from January 1994 forward are subject to revision in future benchmarks.

Revisions in State data (table 11) occurred with the publication of January 1999 data.

Beginning in June 1996, the BLS uses the X-12 ARIMA methodology to seasonally adjust establishment survey data. This procedure, developed by the Bureau of the Census, controls for the effect of varying survey intervals (also known as the 4- versus 5-week effect), thereby providing improved measurement of over-the-month changes and underlying economic trends. Revisions of data, usually for the most recent 5-year period, are made once a year coincident with the benchmark revisions.

In the establishment survey, estimates for the most recent 2 months are based on incomplete returns and are published as preliminary in the tables (12–17 in the *Review*). When all returns have been received, the estimates are revised and published as "final" (prior to any benchmark revisions) in the third month of their appearance. Thus, December data are published as preliminary in January and February and as final in March. For the same reasons, quarterly establishment data (table 1) are preliminary for the first 2 months of publication and final in the third month. Thus, fourth-quarter data are published as preliminary in January and February and as final in March.

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review*, December 1969, pp. 9–20.

FOR ADDITIONAL INFORMATION on establishment survey data, contact the Division of Monthly Industry Employment Statistics: (202) 606–6555.

Unemployment data by State

Description of the series

Data presented in this section are obtained from the Local Area Unemployment Statistics (LAUS) program, which is conducted in cooperation with State employment security agencies.

Monthly estimates of the labor force, employment, and unemployment for States and sub-State areas are a key indicator of local economic conditions, and form the basis for determining the eligibility of an area for benefits under Federal economic assistance programs such as the Job Training Partnership Act. Seasonally adjusted unemployment rates are presented in table 10. Insofar as possible, the concepts and definitions underlying these data are those used in the national estimates obtained from the CPS.

Notes on the data

Data refer to State of residence. Monthly data for all States and the District of Columbia are derived using standardized procedures established by BLS. Once a year, estimates are revised to new population controls, usually with publication of January estimates, and benchmarked to annual average CPS levels.

FOR ADDITIONAL INFORMATION on data in this series, call (202) 606–6392 (table 10) or (202) 606–6559 (table 11).

Compensation and Wage Data

(Tables 1–3; 21–27)

COMPENSATION AND WAGE DATA are gathered by the Bureau from business establishments, State and local governments, labor unions, collective bargaining agreements on file with the Bureau, and secondary sources.

Employment Cost Index

Description of the series

The **Employment Cost Index** (ECI) is a quarterly measure of the rate of change in compensation per hour worked and includes wages, salaries, and employer costs of employee benefits. It uses a fixed market basket of labor—similar in concept to the Consumer Price Index's fixed market basket of goods and services—to measure change over time in employer costs of employing labor.

Statistical series on total compensation costs, on wages and salaries, and on benefit costs are available for private nonfarm workers excluding proprietors, the self-employed, and household workers. The total compensation costs and wages and salaries series are also available for State and local government workers and for the civilian nonfarm economy, which consists of private industry and State and local government workers combined. Federal workers are excluded.

The Employment Cost Index probability sample consists of about 4,400 private nonfarm establishments providing about 23,000 occupational observations and 1,000 State and local government establishments providing 6,000 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

Beginning with June 1986 data, fixed employment weights from the 1980 Census of Population are used each quarter to calculate the civilian and private indexes and the index for State and local governments. (Prior to June 1986, the employment weights are from the 1970 Census of Population.) These fixed weights, also used to derive all of the industry and occupation series indexes, ensure that changes in these indexes reflect only changes in compensa-

tion, not employment shifts among industries or occupations with different levels of wages and compensation. For the bargaining status, region, and metropolitan/nonmetropolitan area series, however, employment data by industry and occupation are not available from the census. Instead, the 1980 employment weights are reallocated within these series each quarter based on the current sample. Therefore, these indexes are not strictly comparable to those for the aggregate, industry, and occupation series.

Definitions

Total compensation costs include wages, salaries, and the employer's costs for employee benefits.

Wages and salaries consist of earnings before payroll deductions, including production bonuses, incentive earnings, commissions, and cost-of-living adjustments.

Benefits include the cost to employers for paid leave, supplemental pay (including nonproduction bonuses), insurance, retirement and savings plans, and legally required benefits (such as Social Security, workers' compensation, and unemployment insurance).

Excluded from wages and salaries and employee benefits are such items as payment-in-kind, free room and board, and tips.

Notes on the data

The Employment Cost Index for changes in wages and salaries in the private nonfarm economy was published beginning in 1975. Changes in total compensation cost—wages and salaries and benefits combined—were published beginning in 1980. The series of changes in wages and salaries and for total compensation in the State and local government sector and in the civilian nonfarm economy (excluding Federal employees) were published beginning in 1981. Historical indexes (June 1981=100) are available on the Internet:

http://stats.bls.gov/ecthome.htm

FOR ADDITIONAL INFORMATION on the Employment Cost Index, contact the Office of Compensation Levels and Trends: (202) 606–6199.

Employee Benefits Survey

Description of the series

Employee benefits data are obtained from the Employee Benefits Survey, an annual survey of the incidence and provisions of selected benefits provided by employers. The survey collects data from a sample of approximately 9,000 private sector and State and local government establishments. The data are presented as a percentage of employees who participate in a certain benefit, or as an average benefit provision (for example, the average number of paid holidays provided to employees per year). Selected data from the survey are presented in table 25 for medium and large private establishments and in table 26 for small private establishments and State and local government.

The survey covers paid leave benefits such as holidays and vacations, and personal, funeral, jury duty, military, family, and sick leave; short-term disability, long-term disability, and life insurance; medical, dental, and vision care plans; defined benefit and defined contribution plans; flexible benefits plans; reimbursement accounts; and unpaid family leave.

Also, data are tabulated on the incidence of several other benefits, such as severance pay, child-care assistance, wellness programs, and employee assistance programs.

Definitions

Employer-provided benefits are benefits that are financed either wholly or partly by the employer. They may be sponsored by a union or other third party, as long as there is some employer financing. However, some benefits that are fully paid for by the employee also are included. For example, long-term care insurance and postretirement life insurance paid entirely by the employee are included because the guarantee of insurability and availability at group premium rates are considered a benefit.

Participants are workers who are covered by a benefit, whether or not they use that benefit. If the benefit plan is financed wholly by employers and requires employees to complete a minimum length of service for eligibility, the workers are considered participants whether or not they have met the requirement. If workers are required to contribute towards the cost of a plan, they are considered participants only if they elect the plan and agree to make the required contributions.

Defined benefit pension plans use predetermined formulas to calculate a retirement benefit (if any), and obligate the employer to provide those benefits. Benefits are generally based on salary, years of service, or both.

Defined contribution plans generally specify the level of employer and employee contributions to a plan, but not the formula for determining eventual benefits. Instead, individual accounts are set up for participants, and benefits are based on amounts credited to these accounts.

Tax-deferred savings plans are a type of defined contribution plan that allow participants to contribute a portion of their salary to an employer-sponsored plan and defer income taxes until withdrawal.

Flexible benefit plans allow employees to choose among several benefits, such as life insurance, medical care, and vacation days, and among several levels of coverage within a given benefit.

Notes on the data

Surveys of employees in medium and large establishments conducted over the 1979–86 period included establishments that employed at least 50, 100, or 250 workers, depending on the industry (most service industries were excluded). The survey conducted in 1987 covered only State and local governments with 50 or more employees. The surveys conducted in 1988 and 1989 included medium and large establishments with 100 workers or more in private industries. All surveys conducted over the 1979–89 period excluded establishments in Alaska and Hawaii, as well as part-time employees.

Beginning in 1990, surveys of State and local governments and small private establishments were conducted in even-numbered years, and surveys of medium and large establishments were conducted in odd-numbered years. The small establishment survey includes all private nonfarm establishments with fewer than 100 workers, while the State and local government survey includes all governments, regardless of the number of workers. All three surveys include full- and part-time workers, and workers in all 50 States and the District of Columbia.

FOR ADDITIONAL INFORMATION on the Employee Benefits Survey, contact the Office of Compensation Levels and Trends (202) 606–6222 or the Internet:

http://stats.bls.gov/ebshome.htm

Work stoppages

Description of the series

Data on work stoppages measure the number and duration of major strikes or lockouts (involving 1,000 workers or more) occurring during the month (or year), the number of workers involved, and the amount of work time lost because of stoppage. These data are presented in table 27.

Data are largely from a variety of published sources and cover only establishments directly involved in a stoppage. They do not measure the indirect or secondary effect of stoppages on other establishments whose employees are idle owing to material shortages or lack of service.

Definitions

Number of stoppages: The number of strikes and lockouts involving 1,000 work-

ers or more and lasting a full shift or longer.

Workers involved: The number of workers directly involved in the stoppage.

Number of days idle: The aggregate number of workdays lost by workers involved in the stoppages.

Days of idleness as a percent of estimated working time: Aggregate workdays lost as a percent of the aggregate number of standard workdays in the period multiplied by total employment in the period.

Notes on the data

This series is not comparable with the one terminated in 1981 that covered strikes involving six workers or more.

FOR ADDITIONAL INFORMATION on work stoppages data, contact the Office of Compensation and Working Conditions: (202) 606–6282, or the Internet:

http://stats.bls.gov/cbahome.htm

Price Data

(Tables 2; 28–38)

PRICE DATA are gathered by the Bureau of Labor Statistics from retail and primary markets in the United States. Price indexes are given in relation to a base period—1982 = 100 for many Producer Price Indexes, 1982–84 = 100 for many Consumer Price Indexes (unless otherwise noted), and 1990 = 100 for International Price Indexes.

Consumer Price Indexes

Description of the series

The **Consumer Price Index** (CPI) is a measure of the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The CPI is calculated monthly for two population groups, one consisting only of urban households whose primary source of income is derived from the employment of wage earners and clerical workers, and the other consisting of all urban households. The wage earner index (CPI-W) is a continuation of the historic index that was introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The all-urban consumer index (CPI-U), introduced in 1978, is representative of the 1993–95 buying habits of about 87 percent of the noninstitutional population of the United States at that time, compared with 32 percent represented in the CPI-W. In addition to wage earners and clerical workers, the CPI-U covers professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors' and dentists' fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items are kept essentially unchanged between major revisions so that only price changes will be measured. All taxes directly associated with the purchase and use of items are included in the index.

Data collected from more than 23,000 retail establishments and 5,800 housing units in 87 urban areas across the country are used to develop the "U.S. city average." Separate estimates for 14 major urban centers are presented in table 29. The areas listed are as indicated in footnote 1 to the table. The area indexes measure only the average change in prices for each area since the base period, and do not indicate differences in the level of prices among cities.

Notes on the data

In January 1983, the Bureau changed the way in which homeownership costs are meaured for the CPI-U. A rental equivalence method replaced the asset-price approach to homeownership costs for that series. In January 1985, the same change was made in the CPI-W. The central purpose of the change was to separate shelter costs from the investment component of home-ownership so that the index would reflect only the cost of shelter services provided by owner-occupied homes. An updated CPI-U and CPI-W were introduced with release of the January 1987 and January 1998 data.

FOR ADDITIONAL INFORMATION on consumer prices, contact the Division of Consumer Prices and Price Indexes: (202) 606–7000.

Producer Price Indexes

Description of the series

Producer Price Indexes (PPI) measure average changes in prices received by domestic producers of commodities in all stages of processing. The sample used for calculating these indexes currently contains about 3,200 commodities and about 80,000 quotations per month, selected to represent the movement of prices of all commodities produced in the manufacturing; agriculture, forestry, and fishing; mining; and gas and electricity and public utilities sectors. The stage-of-processing structure of PPI organizes products by class of buyer and degree of fabrication (that is, finished goods, intermediate goods, and crude materials). The traditional commodity structure of PPI organizes products by similarity of end use or material composition. The industry and product structure of PPI organizes data in accordance with the Standard Industrial Classification (SIC) and the product code extension of the SIC developed by the U.S. Bureau of the Census.

To the extent possible, prices used in calculating Producer Price Indexes apply to the first significant commercial transaction in the United States from the production or central marketing point. Price data are generally collected monthly, primarily by mail questionnaire. Most prices are obtained directly from producing companies on a voluntary and confidential basis. Prices generally are reported for the Tuesday of the week containing the 13th day of the month.

Since January 1992, price changes for the various commodities have been averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1987. The detailed data are aggregated to obtain indexes for stage-of-processing groupings, commodity groupings, durability-of-product groupings, and a number of special composite groups. All Producer Price Index data are subject to revision 4 months after original publication.

FOR ADDITIONAL INFORMATION on producer prices, contact the Division of Industrial Prices and Price Indexes: (202) 606–7705.

International Price Indexes

Description of the series

The **International Price Program** produces monthly and quarterly export and import price indexes for nonmilitary goods traded between the United States and the rest of the world. The export price index provides a measure of price change for all products sold by U.S. residents to foreign buyers. ("Residents" is defined as in the national income accounts; it includes corporations, businesses, and individuals, but does not require the organizations to be U.S. owned nor the individuals to have U.S. citizenship.) The import price index provides a measure of price change for goods purchased from other countries by U.S. residents.

The product universe for both the import and export indexes includes raw materials, agricultural products, semifinished manufactures, and finished manufactures, including both capital and consumer goods. Price data for these items are collected primarily by mail questionnaire. In nearly all cases, the data are collected directly from the exporter or importer, although in a few cases, prices are obtained from other sources.

To the extent possible, the data gathered refer to prices at the U.S. border for exports

and at either the foreign border or the U.S. border for imports. For nearly all products, the prices refer to transactions completed during the first week of the month. Survey respondents are asked to indicate all discounts, allowances, and rebates applicable to the reported prices, so that the price used in the calculation of the indexes is the actual price for which the product was bought or sold.

In addition to general indexes of prices for U.S. exports and imports, indexes are also published for detailed product categories of exports and imports. These categories are defined according to the five-digit level of detail for the Bureau of Economic Analysis End-use Classification (SITC), and the four-digit level of detail for the Harmonized System. Aggregate import indexes by country or region of origin are also available.

BLS publishes indexes for selected categories of internationally traded services, calculated on an international basis and on a balance-of-payments basis.

Notes on the data

The export and import price indexes are weighted indexes of the Laspeyres type. Price relatives are assigned equal importance within each harmonized group and are then aggregated to the higher level. The values assigned to each weight category are based on trade value figures compiled by the Bureau of the Census. The trade weights currently used to compute both indexes relate to 1990.

Because a price index depends on the same items being priced from period to period, it is necessary to recognize when a product's specifications or terms of transaction have been modified. For this reason, the Bureau's questionnaire requests detailed descriptions of the physical and functional characteristics of the products being priced, as well as information on the number of units bought or sold, discounts, credit terms, packaging, class of buyer or seller, and so forth. When there are changes in either the specifications or terms of transaction of a product, the dollar value of each change is deleted from the total price change to obtain the "pure" change. Once this value is determined, a linking procedure is employed which allows for the continued repricing of the item.

For the export price indexes, the preferred pricing is f.a.s. (free alongside ship) U.S. port of exportation. When firms report export prices f.o.b. (free on board), production point information is collected which enables the Bureau to calculate a shipment cost to the port of exportation. An attempt is made to collect two prices for imports. The first is the import price f.o.b. at the foreign port of exportation, which is consistent with the basis for valuation of imports in the national accounts. The second is the import price c.i.f.(costs, insurance, and freight) at the U.S. port of importation, which also includes the other costs associated with bringing the product to the U.S. border. It does not, however, include duty charges. For a given product, only one price basis series is used in the construction of an index.

FOR ADDITIONAL INFORMATION on international prices, contact the Division of International Prices: (202) 606–7155.

Productivity Data

(Tables 2; 39–42)

Business sector and major sectors

Description of the series

The productivity measures relate real output to real input. As such, they encompass a family of measures which include single-factor input measures, such as output per hour, output per unit of labor input, or output per unit of capital input, as well as measures of multifactor productivity (output per unit of combined labor and capital inputs). The Bureau indexes show the change in output relative to changes in the various inputs. The measures cover the business, nonfarm business, manufacturing, and nonfinancial corporate sectors.

Corresponding indexes of hourly compensation, unit labor costs, unit nonlabor payments, and prices are also provided.

Definitions

Output per hour of all persons (labor productivity) is the quantity of goods and services produced per hour of labor input. **Output per unit of capital services** (capital productivity) is the quantity of goods and services produced per unit of capital services input. **Multifactor productivity** is the quantity of goods and services produced per combined inputs. For private business and private nonfarm business, inputs include labor and capital units. For manufacturing, inputs include labor, capital, energy, non-energy materials, and purchased business services.

Compensation per hour is total compensation divided by hours at work. Total compensation equals the wages and salaries of employees plus employers' contributions for social insurance and private benefit plans, plus an estimate of these payments for the self-employed (except for nonfinancial corporations in which there are no self-employed). **Real compensation per hour** is compensation per hour deflated by the change in the Consumer Price Index for All Urban Consumers.

Unit labor costs are the labor compensation costs expended in the production of a unit of output and are derived by dividing compensation by output. **Unit nonlabor payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from current-dollar value of output and dividing by output.

Unit nonlabor costs contain all the components of unit nonlabor payments except unit profits.

Unit profits include corporate profits with inventory valuation and capital consumption adjustments per unit of output.

Hours of all persons are the total hours at work of payroll workers, self-employed persons, and unpaid family workers.

Labor inputs are hours of all persons adjusted for the effects of changes in the education and experience of the labor force.

Capital services are the flow of services from the capital stock used in production. It is developed from measures of the net stock of physical assets—equipment, structures, land, and inventories—weighted by rental prices for each type of asset.

Combined units of labor and capital inputs are derived by combining changes in labor and capital input with weights which represent each component's share of total cost. Combined units of labor, capital, energy, materials, and purchased business services are similarly derived by combining changes in each input with weights that represent each input's share of total costs. The indexes for each input and for combined units are based on changing weights which are averages of the shares in the current and preceding year (the Tornquist index-number formula).

Notes on the data

Business sector output is an annually-weighted index constructed by excluding from real gross domestic product (GDP) the following outputs: general government, nonprofit institutions, paid employees of private households, and the rental value of owner-occupied dwellings. Nonfarm business also excludes farming. Private business and private nonfarm business further exclude government enterprises. The measures are supplied by the U.S. Department of Commerce's Bureau of Economic Analysis. Annual estimates of manufacturing sectoral output are produced by the Bureau of Labor Statistics. Quarterly manufacturing output indexes from the Federal Reserve Board are adjusted to these annual output measures by the BLS. Compensation data are developed from data of the Bureau of Economic Analysis and the Bureau of Labor Statistics. Hours data are developed from data of the Bureau of Labor Statistics.

The productivity and associated cost mea-

sures in tables 39–42 describe the relationship between output in real terms and the labor and capital inputs involved in its production. They show the changes from period to period in the amount of goods and services produced per unit of input.

Although these measures relate output to hours and capital services, they do not measure the contributions of labor, capital, or any other specific factor of production. Rather, they reflect the joint effect of many influences, including changes in technology; shifts in the composition of the labor force; capital investment; level of output; changes in the utilization of capacity, energy, material, and research and development; the organization of production; managerial skill; and characteristics and efforts of the work force.

FOR ADDITIONAL INFORMATION on this productivity series, contact the Division of Productivity Research: (202) 606–5606.

Industry productivity measures

Description of the series

The BLS industry productivity data supplement the measures for the business economy and major sectors with annual measures of labor productivity for selected industries at the three- and four-digit levels of the Standard Industrial Classification system. The industry measures differ in methodology and data sources from the productivity measures for the major sectors because the industry measures are developed independently of the National Income and Product Accounts framework used for the major sector measures.

Definitions

Output per hour is derived by dividing an index of industry output by an index of labor input. For most industries, **output** indexes are derived from data on the value of industry output adjusted for price change. For the remaining industries, output indexes are derived from data on the physical quantity of production.

The **labor input** series consist of the hours of all employees (production and nonproduction workers), the hours of all persons (paid employees, partners, proprietors, and unpaid family workers), or the number of employees, depending upon the industry.

Notes on the data

The industry measures are compiled from data produced by the Bureau of Labor Statistics, the Departments of Commerce, Interior, and Agriculture, the Federal Reserve Board, regulatory agencies, trade associations, and other sources.

For most industries, the productivity indexes refer to the output per hour of all employees. For some transportation industries, only indexes of output per employee are prepared. For some trade and service industries, indexes of output per hour of all persons (including self-employed) are constructed.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Industry Productivity Studies: (202) 606–5618.

International Comparisons

(Tables 43–45)

Labor force and unemployment

Description of the series

Tables 43 and 44 present comparative measures of the labor force, employment, and unemployment—approximating U.S. concepts—for the United States, Canada, Australia, Japan, and several European countries. The unemployment statistics (and, to a lesser extent, employment statistics) published by other industrial countries are not, in most cases, comparable to U.S. unemployment statistics. Therefore, the Bureau adjusts the figures for selected countries, where necessary, for all known major definitional differences. Although precise comparability may not be achieved, these adjusted figures provide a better basis for international comparisons than the figures regularly published by each country.

Definitions

For the principal U.S. definitions of the **labor force**, **employment**, and **unemployment**, see the Notes section on Employment and Unemployment Data: Household survey data.

Notes on the data

The adjusted statistics have been adapted to the age at which compulsory schooling ends in each country, rather than to the U.S. standard of 16 years of age and older. Therefore, the adjusted statistics relate to the population aged 16 and older in France, Sweden, and the United Kingdom; 15 and older in Canada, Australia, Japan, Germany, Italy from 1993 onward, and the Netherlands; and 14 and older in Italy prior to 1993. The institutional population is included in the denominator of the labor force participation rates and employment-population ratios for Japan and Germany; it is excluded for the United States and the other countries.

In the U.S. labor force survey, persons on layoff who are awaiting recall to their jobs are classified as unemployed. European and Japanese layoff practices are quite different in nature from those in the United States; therefore, strict application of the U.S. definition has not been made on this point. For further information, see *Monthly Labor Review*, December 1981, pp. 8–11.

The figures for one or more recent years for France, Germany, Italy, the Netherlands, and the United Kingdom are calculated using adjustment factors based on labor force surveys for earlier years and are considered preliminary. The recent-year measures for these countries, therefore, are subject to revision whenever data from more current labor force surveys become available.

There are breaks in the data series for the United States (1990, 1994), France (1992), Italy (1991, 1993), the Netherlands (1988), and Sweden (1987).

For the United States, the break in series reflects a major redesign of the labor force survey questionnaire and collection methodology introduced in January 1994. Revised population estimates based on the 1990 census, adjusted for the estimated undercount, also were incorporated. In 1996, previously published data for the 1990–93 period were revised to reflect the 1990 census-based population controls, adjusted for the undercount. Therefore, data for 1994 onward are not directly comparable with data for 1993 and earlier years because of the redesign, and data for 1990 onward are not directly comparable with data for 1989 and earlier years because of the introduction of the 1990 census-based population controls, adjusted for the undercount. See the Notes section on Employment and Unemployment Data of this *Review*.

For France, the 1992 break reflects the substitution of standardized European Union Statistical Office (EUROSTAT) unemployment statistics for the unemployment data estimated according to the International Labor Office (ILO) definition and published in the Organization for Economic Cooperation and Development (OECD) annual yearbook and quarterly update. This change was made because the EUROSTAT data are more up-to-date than the OECD figures. Also, since 1992, the EUROSTAT definitions are closer to the U.S. definitions than they were in prior years. The impact of this revision was to lower the unemployment rate by 0.1 percentage point in 1992 and 1993, by 0.4 percentage point in 1994, and 0.6 percentage point in 1995.

For Italy, the 1991 break reflects a revision in the method of weighting sample data. The impact was to increase the unemployment rate by approximately 0.3 percentage point, from 6.6 to 6.9 percent in 1991.

In October 1992, the survey methodol-

ogy was revised and the definition of unemployment was changed to include only those who were actively looking for a job within the 30 days preceding the survey and who were available for work. In addition, the lower age limit for the labor force was raised from 14 to 15 years. (Prior to these changes, BLS adjusted Italy's published unemployment rate downward by excluding from the unemployed those persons who had not actively sought work in the past 30 days.) The break in the series also reflects the incorporation of the 1991 population census results. The impact of these changes was to raise Italy's adjusted unemployment rate by approximately 1.2 percentage points, from 8.3 to 9.5 percent in fourth-quarter 1992. These changes did not affect employment significantly, except in 1993. Estimates by the Italian Statistical Office indicate that employment declined by about 3 percent in 1993, rather than the nearly 4 percent indicated by the data shown in table 44. This difference is attributable mainly to the incorporation of the 1991 population benchmarks in the 1993 data. Data for earlier years have not been adjusted to incorporate the 1991 census results.

For the Netherlands, a new survey questionnaire was introduced in 1992 that allowed for a closer application of ILO guidelines. EUROSTAT has revised the Dutch series back to 1988 based on the 1992 changes. The 1988 revised unemployment rate is 7.6 percent; the previous estimate for the same year was 9.3 percent.

There have been two breaks in series in the Swedish labor force survey, in 1987 and 1993. Adjustments have been made for the 1993 break back to 1987. In 1987, a new questionnaire was introduced. Questions regarding current availability were added and the period of active workseeking was reduced from 60 days to 4 weeks. These changes lowered Sweden's 1987 unemployment rate by 0.4 percentage point, from 2.3 to 1.9 percent. In 1993, the measurement period for the labor force survey was changed to represent all 52 weeks of the year rather than one week each month and a new adjustment for population totals was introduced. The impact was to raise the unemployment rate by approximately 0.5 percentage point, from 7.6 to 8.1 percent. Statistics Sweden revised its labor force survey data for 1987–92 to take into account the break in 1993. The adjustment raised the Swedish unemployment rate by 0.2 percentage point in 1987 and gradually rose to 0.5 percentage point in 1992.

Beginning with 1987, BLS has adjusted the Swedish data to classify students who also sought work as unemployed. The impact of this change was to increase the adjusted unemployment rate by 0.1 percentage point in 1987 and by 1.8 percentage points in 1994, when unemployment was higher. By 1994, the adjusted unemployment rate had risen from 7.8 to 9.6 percent due to the adjustment to include students.

The net effect of the 1987 and 1993 changes and the BLS adjustment for students seeking work lowered Sweden's 1987 unemployment rate from 2.3 to 2.2 percent.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Foreign Labor Statistics: (202) 606–5654.

Manufacturing productivity and labor costs

Description of the series

Table 45 presents comparative indexes of manufacturing labor productivity (output per hour), output, total hours, compensation per hour, and unit labor costs for the United States, Canada, Japan, and nine European countries. These measures are trend comparisons—that is, series that measure changes over time—rather than level comparisons. There are greater technical problems in comparing the levels of manufacturing output among countries.

BLS constructs the comparative indexes from three basic aggregate measures—output, total labor hours, and total compensation. The hours and compensation measures refer to all employed persons (wage and salary earners plus self-employed persons and unpaid family workers) in the United States, Canada, Japan, France, Germany, Norway, and Sweden, and to all employees (wage and salary earners) in the other countries.

Definitions

Output, in general, refers to value added in manufacturing from the national accounts of each country. However, the output series for Japan prior to 1970 is an index of industrial production, and the national accounts measures for the United Kingdom are essentially identical to their indexes of industrial production. While methods of deriving national accounts measures differ from country to country, BLS has reviewed these methods and determined that the series are sufficiently comparable for measuring comparative trends in productivity and unit labor costs.

The 1977–94 output data for the United States are the gross product originating (value added) measures prepared by the Bureau of Economic Analysis of the U.S. Department of Commerce. Comparable manufacturing output data currently are not available prior to 1977. The 1994–95 percent changes in manufacturing output are based on the trend shown by the industrial production index published by the U.S. Federal Reserve Board for the manufacturing sector.

U.S. gross product originating is a chain-type annual-weighted series. (For more information on the U.S. measure, see Robert E. Yuskavage, "Improved Estimates of Gross Product by Industry, 1959–94," *Survey of Current Business*, August 1996, pp. 133–55.) The Japanese value added series is based upon one set of fixed price weights for the years 1970 through 1996. Output series for the other foreign economies also employ fixed price weights, but the weights are updated periodically (for example, every 5 or 10 years).

To preserve the comparability of the U.S. measures with those for other economies, BLS uses gross product originating in manufacturing for the United States for these comparative measures. The gross product originating series differs from the manufacturing output series that BLS publishes in its news releases on quarterly measures of U.S. productivity and costs (and that underlies the measures that appear in tables 39 and 41 in this section). The quarterly measures are on a "sectoral output" basis, rather than a value-added basis. Sectoral output is gross output less intrasector transactions.

Total labor hours refers to hours worked in all countries. The measures are developed from statistics of manufacturing employment and average hours. The series used for France (from 1970 forward), Norway, and Sweden are official series published with the national accounts. Where official total hours series are not available, the measures are developed by BLS using employment figures published with the national accounts, or other comprehensive employment series, and estimates of annual hours worked. For Germany, BLS uses estimates of average hours worked developed by a research institute connected to the Ministry of Labor for use with the national accounts employment figures. For the other countries, BLS constructs its own estimates of average hours.

Denmark has not published estimates of average hours for 1994–96; therefore, the BLS measure of labor input for Denmark ends in 1993.

Total compensation (labor cost) includes all payments in cash or in-kind made directly to employees plus employer expenditures for legally required insurance programs and contractual and private benefit plans. The measures are from the national accounts of each country, except those for Belgium, which are developed by BLS using statistics on employment, average hours, and hourly compensation. For France and Sweden, compensation is increased to account for other significant taxes on payroll or employment. For the United Kingdom, compensation is reduced between 1967 and 1991 to account for employment-related subsidies. Self-employed workers are included in the all-employed-persons

measures by assuming that their hourly compensation is equal to the average for wage and salary employees.

Notes on the data

In general, the measures relate to total manufacturing as defined by the International Standard Industrial Classification. However, the measures for France (for all years) and Italy (beginning 1970) refer to mining and manufacturing less energy-related products, and the measures for Denmark include mining and exclude manufacturing handicrafts from 1960 to 1966.

The measures for recent years may be based on current indicators of manufacturing output (such as industrial production indexes), employment, average hours, and hourly compensation until national accounts and other statistics used for the long-term measures become available.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Foreign Labor Statistics: (202) 606–5654.

Occupational Injury and Illness Data

(Tables 46–47)

Survey of Occupational Injuries and Illnesses

Description of the series

The Survey of Occupational Injuries and Illnesses collects data from employers about their workers' job-related nonfatal injuries and illnesses. The information that employers provide is based on records that they maintain under the Occupational Safety and Health Act of 1970. Self-employed individuals, farms with fewer than 11 employees, employers regulated by other Federal safety and health laws, and Federal, State, and local government agencies are excluded from the survey.

The survey is a Federal-State cooperative program with an independent sample selected for each participating State. A stratified random sample with a Neyman allocation is selected to represent all private industries in the State. The survey is stratified by Standard Industrial Classification and size of employment.

Definitions

Under the Occupational Safety and Health Act, employers maintain records of nonfatal work-related injuries and illnesses that involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment other than first aid.

Occupational injury is any injury such as a cut, fracture, sprain, or amputation that results from a work-related event or a single, instantaneous exposure in the work environment.

Occupational illness is an abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to factors associated with employment. It includes acute and chronic illnesses or disease which may be caused by inhalation, absorption, ingestion, or direct contact.

Lost workday injuries and illnesses are cases that involve days away from work, or days of restricted work activity, or both.

Lost workdays include the number of workdays (consecutive or not) on which the employee was either away from work or at work in some restricted capacity, or both, because of an occupational injury or illness. BLS measures of the number and incidence rate of lost workdays were discontinued beginning with the 1993 survey. The number of days away from work or days of restricted work activity does not include the day of injury or onset of illness or any days on which the employee would not have worked, such as a Federal holiday, even though able to work.

Incidence rates are computed as the number of injuries and/or illnesses or lost work days per 100 full-time workers.

Notes on the data

The definitions of occupational injuries and illnesses are from *Recordkeeping Guidelines for Occupational Injuries and Illnesses* (U.S. Department of Labor, Bureau of Labor Statistics, September 1986).

Estimates are made for industries and employment size classes for total recordable cases, lost workday cases, days away from work cases, and nonfatal cases without lost workdays. These data also are shown separately for injuries. Illness data are available for seven categories: occupational skin diseases or disorders, dust diseases of the lungs, respiratory conditions due to toxic agents, poisoning (systemic effects of toxic agents), disorders due to physical agents (other than toxic materials), disorders associated with repeated trauma, and all other occupational illnesses.

The survey continues to measure the number of new work-related illness cases which are recognized, diagnosed, and reported during the year. Some conditions, for example, long-term latent illnesses caused by exposure to carcinogens, often are difficult to relate to the workplace and are not adequately recognized and reported. These long-term latent illnesses are believed to be understated in the survey's illness measure. In contrast, the overwhelming majority of the reported new illnesses are those which are easier to directly relate to workplace activity (for example, contact dermatitis and carpal tunnel syndrome).

Most of the estimates are in the form of incidence rates, defined as the number of injuries and illnesses per 100 equivalent full-time workers. For this purpose, 200,000 employee hours represent 100 employee years (2,000 hours per employee). Full detail on the available measures is presented in the annual bulletin, *Occupational Injuries and Illnesses: Counts, Rates, and Characteristics.*

Comparable data for more than 40 States and territories are available from the BLS Office of Safety, Health and Working Conditions. Many of these States publish data on State and local government employees in addition to private industry data.

Mining and railroad data are furnished to BLS by the Mine Safety and Health Administration and the Federal Railroad Administration. Data from these organizations are included in both the national and State data published annually.

With the 1992 survey, BLS began publishing details on serious, nonfatal incidents resulting in days away from work. Included are some major characteristics of the injured and ill workers, such as occupation, age, gender, race, and length of service, as well as the circumstances of their injuries and illnesses (nature of the disabling condition, part of body affected, event and exposure, and the source directly producing the condition). In general, these data are available nationwide for detailed industries and for individual States at more aggregated industry levels.

FOR ADDITIONAL INFORMATION on occupational injuries and illnesses, contact the Office of Occupational Safety, Health and Working Conditions at (202) 606–6180, or access the Internet at:

http://www.bls.gov/oshhome.htm

Census of Fatal Occupational Injuries

The Census of Fatal Occupational Injuries compiles a complete roster of fatal job-related injuries, including detailed data about the fatally injured workers and the fatal events. The program collects and cross checks fatality information from multiple sources, including death certificates, State and Federal workers' compensation reports, Occupational Safety and Health Administration and Mine Safety and Health Administration records, medical examiner and autopsy reports, media accounts, State motor vehicle fatality records, and follow-up questionnaires to employers.

In addition to private wage and salary workers, the self-employed, family members, and Federal, State, and local govern-

ment workers are covered by the program. To be included in the fatality census, the decedent must have been employed (that is working for pay, compensation, or profit) at the time of the event, engaged in a legal work activity, or present at the site of the incident as a requirement of his or her job.

Definition

A fatal work injury is any intentional or unintentional wound or damage to the body resulting in death from acute exposure to energy, such as heat or electricity, or kinetic energy from a crash, or from the absence of such essentials as heat or oxygen caused by a specific event or incident or series of events within a single workday or shift. Fatalities that occur during a person's commute to or from work are excluded from the census, as well as work-related illnesses, which can be difficult to identify due to long latency periods.

Notes on the data

Twenty-eight data elements are collected, coded, and tabulated in the fatality program, including information about the fatally injured worker, the fatal incident, and the machinery or equipment involved. Summary worker demographic data and event characteristics are included in a national news release that is available about 8 months after the end of the reference year. The Census of Fatal Occupational Injuries was initiated in 1992 as a joint Federal-State effort. Most States issue summary information at the time of the national news release.

FOR ADDITIONAL INFORMATION on the Census of Fatal Occupational Injuries contact the BLS Office of Safety, Health, and Working Conditions at (202) 606–6175, or the Internet at:

http://www.bls.gov/oshhome.htm

1. Labor market indicators

Selected indicators	1997	1998	1997				1998				1999
			I	II	III	IV	I	II	III	IV	I
Employment data											
Employment status of the civilian noninstitutionalized population (household survey):[1]											
Labor force participation rate	67.1	67.1	67.0	67.1	67.1	67.1	67.2	67.0	67.0	67.1	67.3
Employment-population ratio	63.8	64.1	63.5	63.8	63.9	63.9	64.1	64.1	64.0	64.1	64.4
Unemployment rate	4.9	4.5	5.2	5.0	4.9	4.7	4.6	4.4	4.5	4.4	4.3
Men	4.9	4.4	5.2	4.9	4.8	4.7	4.5	4.3	4.5	4.3	4.1
16 to 24 years	11.8	11.1	12.3	11.6	11.7	11.5	11.3	10.7	11.5	10.7	10.3
25 years and over	3.6	3.2	3.9	3.7	3.5	3.4	3.3	3.1	3.2	3.2	3.0
Women	5.0	4.6	5.3	5.1	5.0	4.7	4.8	4.6	4.6	4.5	4.4
16 to 24 years	10.7	9.8	11.4	11.0	10.4	10.1	10.1	9.6	9.9	9.4	9.9
25 years and over	3.9	3.6	4.1	3.9	4.0	3.6	3.8	3.6	3.5	3.6	3.4
Employment, nonfarm (payroll data), in thousands:[1]											
Total	122,690	125,832	121,461	122,317	122,995	123,934	124,795	125,516	126,141	126,816	127,561
Private sector	103,120	105,970	102,001	102,797	103,392	104,271	105,084	105,714	106,249	106,831	107,467
Goods-producing	24,934	25,256	24,787	24,881	24,963	25,108	25,296	25,315	25,210	25,221	25,233
Manufacturing	18,657	18,716	18,579	18,625	18,672	18,756	18,825	18,804	18,660	18,588	18,487
Service-producing	97,756	100,576	96,674	97,436	98,032	98,826	99,500	100,201	100,931	101,596	102,328
Average hours:											
Private sector	34.6	34.6	34.6	34.6	34.6	34.7	34.7	34.6	34.5	34.6	34.5
Manufacturing	42.0	41.7	41.9	42.0	41.9	42.1	42.0	41.7	41.7	41.7	41.6
Overtime	4.8	4.6	4.8	4.8	4.8	4.9	4.8	4.6	4.6	4.5	4.5
Employment Cost Index[2]											
Percent change in the ECI, compensation:											
All workers (excluding farm, household and Federal workers)	3.3	3.4	.8	.6	1.0	.8	.8	.8	1.2	.6	.4
Private industry workers	3.4	3.5	.8	.8	.8	.9	.9	.9	1.1	.6	.4
Goods-producing[3]	2.4	2.8	.4	1.0	.7	.4	.7	.8	.7	.5	.8
Service-producing[3]	3.9	3.8	1.1	.7	1.0	1.1	1.0	.8	1.3	.6	.3
State and local government workers	2.3	3.0	.4	.1	1.3	.5	.6	.3	1.5	.6	.5
Workers by bargaining status (private industry):											
Union	2.1	3.0	.2	.6	1.1	.2	.4	1.0	1.1	.5	.4
Nonunion	3.8	3.5	1.1	.8	.8	1.0	1.0	.8	1.1	.6	.5

[1] Quarterly data seasonally adjusted.

[2] Annual changes are December-to-December changes. Quarterly changes are calculated using the last month of each quarter.

[3] Goods-producing industries include mining, construction, and manufacturing. Service-producing industries include all other private sector industries.

NOTE: Dash indicates data not available.

2. Annual and quarterly percent changes in compensation, prices, and productivity

Selected measures	1997	1998	1997				1998				1999
			I	II	III	IV	I	II	III	IV	I
Compensation data[1,2]											
Employment Cost Index—compensation (wages, salaries, benefits):											
Civilian nonfarm	3.3	3.4	0.8	0.6	1.0	0.8	0.8	0.8	1.2	0.6	0.4
Private nonfarm	3.4	3.5	.8	.8	.8	.9	.9	.9	1.1	.6	.4
Employment Cost Index—wages and salaries:											
Civilian nonfarm	3.8	3.7	.9	.7	1.2	.9	.9	.7	1.3	.7	.5
Private nonfarm	3.9	3.9	1.0	.9	1.0	1.0	1.1	.9	1.3	.6	.5
Price data[1]											
Consumer Price Index (All Urban Consumers): All Items	1.7	1.6	.9	.2	.6	.1	.6	.5	.4	.2	.7
Producer Price Index:											
Finished goods	−1.2	−.1	−.5	−.4	.2	−.5	−.8	.5	−.1	.3	.2
Finished consumer goods	−1.4	−.1	−.6	−.2	.4	−.8	−1.0	.8	.0	.2	.2
Capital equipment	−.6	−.1	.1	−.5	−.7	.5	.0	−.5	−.4	.8	.0
Intermediate materials, supplies, and components	−.8	−3.1	−.3	.1	.2	−.8	−1.4	.2	−.5	−1.5	−.2
Crude materials	−11.3	−17.6	−11.5	−.4	1.3	−.6	−8.8	−1.8	−5.6	−3.6	.8
Productivity data[3]											
Output per hour of all persons:											
Business sector	1.5	2.4	.7	1.8	3.6	.8	4.1	.1	2.6	4.6	4.7
Nonfarm business sector	1.2	2.2	.1	1.6	3.4	.9	3.6	.3	2.5	4.3	4.0
Nonfinancial corporations[4]	2.5	3.0	1.3	2.3	5.6	1.0	2.7	3.1	4.4	3.3	–

[1] Annual changes are December-to-December changes. Quarterly changes are calculated using the last month of each quarter. Compensation and price data are not seasonally adjusted, and the price data are not compounded.

[2] Excludes Federal and private household workers.

[3] Annual rates of change are computed by comparing annual averages. Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.

[4] Output per hour of all employees.

NOTE: Dash indicates data not available.

3. Alternative measures of wage and compensation changes

Components	Quarterly average						Four quarters ending—					
	1997	1998				1999	1997	1998				1999
	IV	I	II	III	IV	I	IV	I	II	III	IV	I
Average hourly compensation:[1]												
All persons, business sector	5.2	5.0	4.1	3.7	4.4	5.2	3.8	4.1	4.6	4.5	4.3	4.4
All persons, nonfarm business sector	4.9	4.7	4.1	3.9	4.0	4.3	3.7	3.9	4.4	4.4	4.2	4.1
Employment Cost Index—compensation:												
Civilian nonfarm[2]	.8	.8	.8	1.2	.6	.4	3.3	3.3	3.5	3.7	3.4	3.0
Private nonfarm	.9	.9	.9	1.1	.6	.4	3.4	3.5	3.5	3.8	3.5	3.0
Union	.2	.4	1.0	1.1	.5	.4	2.1	2.3	2.7	2.7	3.0	3.0
Nonunion	1.0	1.0	.8	1.1	.6	.5	3.8	3.7	3.8	4.0	3.5	3.0
State and local governments	.5	.6	.3	1.5	.6	.5	2.3	2.5	2.7	3.0	3.0	2.9
Employment Cost Index—wages and salaries:												
Civilian nonfarm[2]	.9	.9	.7	1.3	.7	.5	3.8	3.7	3.8	4.0	3.7	3.3
Private nonfarm	1.0	1.1	.9	1.3	.6	.5	3.9	4.0	4.0	4.3	3.9	3.3
Union	.5	.5	.8	1.3	.5	.4	2.8	2.9	3.0	3.2	3.3	3.1
Nonunion	1.1	1.1	.9	1.3	.7	.5	4.2	4.2	4.1	4.4	4.0	3.3
State and local governments	.6	.5	.2	1.6	.7	.4	2.7	2.8	3.0	3.0	3.1	2.9

[1] Seasonally adjusted. "Quarterly average" is percent change from a quarter ago, at an annual rate.

[2] Excludes Federal and household workers.

4. Employment status of the population, by sex, age, race, and Hispanic origin, monthly data seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
TOTAL															
Civilian noninstitutional population[1]	203,133	205,220	204,731	204,899	205,085	205,270	205,497	205,699	205,919	206,104	206,270	206,719	206,873	207,036	207,236
Civilian labor force	136,297	137,673	137,232	137,369	137,498	137,407	137,481	138,081	138,116	138,193	138,547	139,347	139,271	138,816	139,091
Participation rate	67.1	67.1	67.0	67.0	67.0	66.9	66.9	67.1	67.1	67.1	67.2	67.4	67.3	67.0	67.1
Employed	129,558	131,463	131,280	131,330	131,253	131,176	131,264	131,818	131,858	132,113	132,526	133,396	133,144	133,033	133,069
Employment-population ratio[2]	63.8	64.1	64.1	64.1	64.0	63.9	63.9	64.1	64.0	64.1	64.2	64.5	64.4	64.3	64.2
Unemployed	6,739	6,210	5,952	6,039	6,245	6,231	6,217	6,263	6,258	6,080	6,021	5,950	6,127	5,783	6,022
Unemployment rate	4.9	4.5	4.3	4.4	4.5	4.5	4.5	4.5	4.5	4.4	4.3	4.3	4.4	4.2	4.3
Not in the labor force	66,837	67,547	67,499	67,530	67,587	67,863	67,998	67,618	67,803	67,911	67,723	67,372	67,602	68,220	68,145
Men, 20 years and over															
Civilian noninstitutional population[1]	89,879	90,790	90,580	90,622	90,700	90,802	90,889	91,003	91,101	91,192	91,220	91,124	91,189	91,215	91,302
Civilian labor force	69,166	69,715	69,616	69,608	69,590	69,738	69,518	69,869	69,913	70,023	70,069	70,295	70,174	69,951	69,991
Participation rate	77.0	76.8	76.9	76.8	76.7	76.8	76.5	76.8	76.7	76.8	76.8	77.1	77.0	76.7	76.7
Employed	66,284	67,135	67,173	67,084	66,994	67,056	66,940	67,252	67,362	67,573	67,553	67,884	67,577	67,713	67,608
Employment-population ratio[2]	73.7	73.9	74.2	74.0	73.9	73.8	73.7	73.9	73.9	74.1	74.1	74.5	74.1	74.2	74.0
Agriculture	2,356	2,350	2,423	2,331	2,337	2,382	2,420	2,402	2,449	2,374	2,237	2,312	2,212	2,222	2,353
Nonagricultural industries	63,927	64,785	64,750	64,753	64,657	64,674	64,520	64,860	64,913	65,199	65,316	65,572	65,365	65,492	65,255
Unemployed	2,882	2,580	2,443	2,524	2,596	2,682	2,578	2,607	2,551	2,450	2,516	2,411	2,598	2,238	2,383
Unemployment rate	4.2	3.7	3.5	3.6	3.7	3.8	3.7	3.7	3.6	3.5	3.6	3.4	3.7	3.2	3.4
Women, 20 years and over															
Civilian noninstitutional population[1]	97,889	98,786	98,583	98,668	98,735	98,778	98,901	98,994	99,037	99,135	99,181	99,686	99,746	99,833	99,923
Civilian labor force	59,198	59,198	59,539	59,583	59,613	59,469	59,708	59,804	59,826	59,896	60,078	60,718	60,622	60,533	60,788
Participation rate	60.5	60.4	60.4	60.4	60.4	60.2	60.4	60.4	60.4	60.4	60.6	60.9	60.8	60.6	60.8
Employed	56,613	57,278	57,117	57,235	57,190	57,078	57,295	57,426	57,437	57,503	57,745	58,466	58,291	58,183	58,320
Employment-population ratio[2]	57.8	58.0	57.9	58.0	57.9	57.8	57.9	58.0	58.0	58.0	58.2	58.7	58.4	58.3	58.4
Agriculture	798	768	726	767	763	781	806	767	771	734	753	808	839	834	801
Nonagricultural industries	55,815	56,510	56,391	56,468	56,427	56,297	56,489	56,659	56,666	56,769	56,992	57,659	57,452	57,349	57,519
Unemployed	2,585	2,424	2,422	2,348	2,423	2,387	2,413	2,378	2,389	2,393	2,333	2,251	2,330	2,350	2,468
Unemployment rate	4.4	4.1	4.1	3.9	4.1	4.0	4.0	4.0	4.0	4.0	3.9	3.7	3.8	3.9	4.1
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	15,365	15,644	15,569	15,609	15,651	15,690	15,689	15,702	15,781	15,777	15,777	15,909	15,939	15,988	16,011
Civilian labor force	7,932	8,256	8,077	8,178	8,295	8,204	8,255	8,408	8,377	8,274	8,400	8,334	8,475	8,331	8,312
Participation rate	51.6	52.8	51.9	52.4	53.0	52.3	52.6	53.5	53.1	52.4	52.9	52.4	53.2	52.1	51.9
Employed	6,661	7,051	6,990	7,011	7,069	7,042	7,029	7,130	7,059	7,037	7,228	7,046	7,276	7,136	7,141
Employment-population ratio[2]	43.4	45.1	44.9	44.9	45.2	44.9	44.8	45.4	44.7	44.6	45.5	44.3	45.7	44.6	44.6
Agriculture	244	261	232	253	263	260	266	301	338	240	232	179	277	224	230
Nonagricultural industries	6,417	6,790	6,758	6,758	6,806	6,782	6,763	6,829	6,721	6,797	6,996	6,867	6,999	6,912	6,911
Unemployed	1,271	1,205	1,087	1,167	1,226	1,162	1,226	1,278	1,318	1,237	1,172	1,288	1,199	1,195	1,171
Unemployment rate	16.0	14.6	13.5	14.3	14.8	14.2	14.9	15.2	15.7	15.0	14.0	15.5	14.1	14.3	14.1
White															
Civilian noninstitutional population[1]	169,993	171,478	171,141	171,257	171,387	171,513	171,655	171,804	171,956	172,084	172,197	172,394	172,491	172,597	172,730
Civilian labor force	114,693	115,415	115,121	115,312	115,208	115,071	115,385	115,751	115,714	115,687	115,996	116,529	116,610	116,284	116,370
Participation rate	67.5	67.3	67.3	67.3	67.2	67.1	67.2	67.4	67.3	67.2	67.4	67.6	67.6	67.4	67.4
Employed	109,856	110,931	110,858	110,959	110,838	110,676	110,848	111,221	111,162	111,304	111,560	112,135	112,189	112,144	111,917
Employment-population ratio[2]	64.6	64.7	64.8	64.8	64.6	64.5	64.6	64.7	64.6	64.7	64.8	65.0	65.0	65.0	64.8
Unemployed	4,836	4,484	4,263	4,353	4,570	4,395	4,537	4,530	4,552	4,383	4,436	4,394	4,420	4,140	4,454
Unemployment rate	4.2	3.9	3.7	3.8	4.0	3.8	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.6	3.8
Black															
Civilian noninstitutional population[1]	24,003	24,373	24,289	24,317	24,349	24,381	24,418	24,458	24,496	24,529	24,529	24,665	24,697	24,729	24,765
Civilian labor force	15,529	15,982	15,901	15,760	16,025	16,045	15,937	16,027	16,163	16,201	16,157	16,356	16,242	16,212	16,286
Participation rate	64.7	65.6	65.5	64.8	65.8	65.8	65.3	65.5	66.0	66.0	65.8	66.3	65.8	65.6	65.8
Employed	13,969	14,556	14,477	14,351	14,662	14,511	14,517	14,584	14,776	14,804	14,884	15,085	14,900	14,904	15,029
Employment-population ratio[2]	58.2	59.7	59.6	59.0	60.2	59.5	59.5	59.6	60.3	60.4	60.6	61.2	60.3	60.3	60.7
Unemployed	1,560	1,426	1,424	1,409	1,363	1,534	1,420	1,443	1,387	1,397	1,273	1,271	1,342	1,308	1,257
Unemployment rate	10.0	8.9	9.0	8.9	8.5	9.6	8.9	9.0	8.6	8.6	7.9	7.8	8.3	8.1	7.7

See footnotes at end of table.

4. Continued—Employment status of the population, by sex, age, race, and Hispanic origin, monthly data seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Hispanic origin															
Civilian noninstitutional population[1]	20,321	21,070	20,915	20,975	21,036	21,097	21,159	21,224	21,286	21,349	21,405	21,296	21,355	21,414	21,483
Civilian labor force	13,796	14,317	14,289	14,378	14,375	14,267	14,316	14,457	14,437	14,389	14,488	14,511	14,591	14,570	14,543
Participation rate	67.9	67.9	68.3	68.5	68.3	67.6	67.7	68.1	67.8	67.4	67.7	68.1	68.3	68.0	67.7
Employed	12,726	13,291	13,332	13,387	13,301	13,245	13,257	13,394	13,382	13,345	13,383	13,550	13,610	13,732	13,541
Employment-population ratio[2]	62.6	63.1	63.7	63.8	63.2	62.8	62.7	63.1	62.9	62.5	62.5	63.6	63.7	64.1	63.0
Unemployed	1,069	1,026	957	991	1,074	1,022	1,059	1,063	1,055	1,044	1,105	960	980	838	1,002
Unemployment rate	7.7	7.2	6.7	6.9	7.5	7.2	7.4	7.4	7.3	7.3	7.6	6.6	6.7	5.8	6.9

[1] The population figures are not seasonally adjusted.

[2] Civilian employment as a percent of the civilian noninstitutional population.

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals because data for the "other races" groups are not presented and Hispanics are included in both the white and black population groups.

5. Selected employment indicators, monthly data seasonally adjusted

[In thousands]

Selected categories	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Characteristic															
Employed, 16 years and over	129,558	131,463	131,280	131,330	131,253	131,176	131,264	131,818	131,858	132,113	132,526	133,396	133,144	133,033	133,069
Men	69,685	70,693	70,695	70,603	70,592	70,629	70,503	70,841	70,925	71,182	71,204	71,459	71,276	71,352	71,225
Women	59,873	60,771	60,585	60,727	60,661	60,547	60,761	60,977	60,933	60,931	61,322	61,937	61,869	61,680	61,845
Married men, spouse present	42,642	42,923	42,860	42,560	42,648	42,850	42,874	43,170	43,090	43,209	43,227	43,542	43,016	43,114	43,190
Married women, spouse present	32,755	32,872	32,919	32,815	32,820	32,719	32,670	32,891	33,037	32,953	33,093	33,652	33,092	33,134	33,285
Women who maintain families	7,775	7,904	7,829	7,854	7,909	7,875	7,928	7,984	7,940	7,969	8,087	8,076	8,113	8,148	8,050
Class of worker															
Agriculture:															
Wage and salary workers	1,890	2,000	1,990	1,920	1,857	2,010	2,111	2,145	2,247	2,005	1,912	1,987	1,895	1,893	1,908
Self-employed workers	1,457	1,341	1,345	1,391	1,445	1,374	1,342	1,290	1,282	1,304	1,304	1,298	1,381	1,376	1,439
Unpaid family workers	51	38	33	50	44	32	31	40	33	40	34	30	44	39	31
Nonagricultural industries:															
Wage and salary workers	116,983	119,019	118,705	118,852	118,733	118,647	118,840	119,148	119,275	119,718	120,380	121,115	121,066	121,005	120,785
Government	18,131	18,383	18,231	18,162	18,467	18,374	18,332	18,448	18,547	18,607	18,686	18,913	18,782	18,699	18,709
Private industries	98,852	100,637	100,474	100,690	100,266	100,273	100,508	100,700	100,728	101,111	101,694	102,202	102,283	102,306	102,076
Private households	915	962	996	992	962	966	871	918	946	969	943	881	849	917	941
Other	97,937	99,674	99,478	99,698	99,304	99,307	99,637	99,782	99,782	100,142	100,751	101,321	101,434	101,389	101,135
Self-employed workers	9,056	8,962	9,064	9,012	8,971	9,060	8,955	9,096	9,030	8,929	8,814	8,830	8,658	8,650	8,813
Unpaid family workers	120	103	119	95	97	91	88	88	95	112	122	121	114	125	63
Persons at work part time[1]															
All industries:															
Part time for economic reasons	4,068	3,665	3,755	3,754	3,792	3,757	3,503	3,419	3,404	3,340	3,417	3,562	3,426	3,564	3,408
Slack work or business conditions	2,286	2,095	2,095	2,119	2,183	2,299	2,019	1,913	2,031	1,910	1,927	2,093	1,984	2,045	1,920
Could only find part-time work	1,468	1,258	1,308	1,317	1,248	1,213	1,188	1,168	1,136	1,157	1,148	1,115	1,141	1,208	1,124
Part time for noneconomic reasons	18,149	18,530	18,296	18,544	18,619	18,589	18,653	18,687	18,667	18,634	18,674	18,485	18,642	18,545	18,882
Nonagricultural industries:															
Part time for economic reasons	3,879	3,501	3,606	3,608	3,618	3,606	3,339	3,191	3,253	3,191	3,257	3,413	3,298	3,374	3,224
Slack work or business conditions	2,167	1,997	2,010	2,033	2,102	2,193	1,926	1,800	1,927	1,824	1,841	1,989	1,906	1,955	1,831
Could only find part-time work	1,433	1,228	1,282	1,286	1,210	1,182	1,155	1,132	1,110	1,130	1,116	1,094	1,108	1,159	1,092
Part time for noneconomic reasons	17,564	17,954	17,653	17,956	17,992	17,982	18,031	18,161	18,107	18,110	18,155	17,921	18,061	17,944	18,320

[1] Excludes persons "with a job but not at work" during the survey period for such reasons as vacation, illness, or industrial disputes.

6. Selected unemployment indicators, monthly data seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Characteristic															
Total, all workers	4.9	4.5	4.3	4.4	4.5	4.5	4.5	4.5	4.5	4.4	4.3	4.3	4.4	4.2	4.3
Both sexes, 16 to 19 years	16.0	14.6	13.5	14.3	14.8	14.2	14.9	15.2	15.7	15.0	14.0	15.5	14.1	14.3	14.1
Men, 20 years and over	4.2	3.7	3.5	3.6	3.7	3.8	3.7	3.7	3.6	3.5	3.6	3.4	3.7	3.2	3.4
Women, 20 years and over	4.4	4.1	4.1	3.9	4.1	4.0	4.0	4.0	4.0	4.0	3.9	3.7	3.8	3.9	4.1
White, total	4.2	3.9	3.7	3.8	4.0	3.8	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.6	3.8
Both sexes, 16 to 19 years	13.6	12.6	11.9	12.2	13.4	11.5	12.9	12.8	13.5	13.0	12.6	13.0	11.8	11.9	12.1
Men, 16 to 19 years	14.3	14.1	12.9	14.0	14.4	13.2	14.2	14.7	14.1	14.1	14.5	14.1	12.2	12.7	12.6
Women, 16 to 19 years	12.8	10.9	10.7	10.1	12.3	9.7	11.5	10.8	13.0	11.6	10.6	11.9	11.4	11.1	11.6
Men, 20 years and over	3.6	3.2	3.0	3.2	3.3	3.3	3.3	3.3	3.2	3.1	3.2	3.1	3.3	2.8	3.0
Women, 20 years and over	3.7	3.4	3.4	3.3	3.4	3.4	3.5	3.4	3.4	3.4	3.3	3.3	3.2	3.3	3.6
Black, total	10.0	8.9	9.0	8.9	8.5	9.6	8.9	9.0	8.6	8.6	7.9	7.8	8.3	8.1	7.7
Both sexes, 16 to 19 years	32.4	27.6	25.9	29.9	22.5	28.7	28.1	29.2	28.7	27.5	22.4	29.8	29.2	31.0	28.1
Men, 16 to 19 years	36.5	30.1	26.0	31.2	22.4	30.2	29.7	32.7	34.7	33.0	27.3	34.2	31.6	32.9	33.0
Women, 16 to 19 years	28.7	25.3	25.7	27.4	22.6	27.0	26.8	25.7	23.5	22.1	17.6	25.0	27.0	29.1	23.5
Men, 20 years and over	8.5	7.4	7.5	6.9	7.1	8.7	7.6	7.1	6.9	7.0	6.7	5.9	6.7	5.8	6.1
Women, 20 years and over	8.8	7.9	8.1	8.3	7.8	7.9	7.6	7.9	7.5	7.6	7.0	6.6	7.1	7.2	6.8
Hispanic origin, total	7.7	7.2	6.7	6.9	7.5	7.2	7.4	7.4	7.3	7.3	7.6	6.6	6.7	5.8	6.9
Married men, spouse present	2.7	2.4	2.3	2.4	2.2	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.4	2.1	2.3
Married women, spouse present	3.1	2.9	2.8	2.8	2.9	2.8	3.1	2.7	2.8	2.9	2.8	2.8	2.8	2.7	2.9
Women who maintain families	8.1	7.2	7.5	7.5	7.1	6.9	6.8	7.6	6.9	6.9	6.3	6.1	6.5	6.7	7.2
Full-time workers	4.8	4.3	4.2	4.3	4.4	4.4	4.4	4.3	4.3	4.2	4.2	4.1	4.3	4.0	4.2
Part-time workers	5.5	5.3	4.9	4.9	5.2	5.2	5.3	5.3	5.5	5.4	5.2	5.2	4.9	4.9	4.9
Industry															
Nonagricultural wage and salary workers	5.0	4.6	4.4	4.5	4.6	4.6	4.7	4.8	4.6	4.5	4.4	4.3	4.3	4.2	4.4
Mining	3.8	3.2	2.9	1.6	4.0	3.9	3.6	3.0	2.4	2.2	4.3	7.4	7.7	5.3	9.3
Construction	9.0	7.5	6.6	8.0	7.9	6.8	7.4	8.6	6.7	7.0	6.4	7.3	7.5	6.7	7.4
Manufacturing	4.2	3.9	3.9	3.6	3.6	4.3	3.9	4.0	3.9	3.8	4.0	3.5	3.7	3.4	3.3
Durable goods	3.5	3.4	3.4	3.0	3.0	4.1	3.5	3.7	3.2	3.2	3.4	3.4	3.3	2.9	3.1
Nondurable goods	5.1	4.7	4.5	4.6	4.6	4.6	4.5	4.6	5.1	4.8	4.9	3.8	4.3	4.1	3.7
Transportation and public utilities	3.5	3.4	3.2	3.1	3.5	3.4	3.5	3.5	3.5	3.2	3.2	2.5	3.2	2.9	2.8
Wholesale and retail trade	6.2	5.5	5.4	5.3	5.6	5.6	5.6	5.7	5.6	5.2	5.5	5.2	5.2	5.4	5.4
Finance, insurance, and real estate	3.0	2.5	2.3	2.1	2.2	2.1	2.7	2.4	2.5	2.8	2.8	2.4	2.4	1.9	3.2
Services	4.6	4.5	4.3	4.7	4.6	4.6	4.7	4.5	4.7	4.6	4.1	4.1	4.0	4.2	4.1
Government workers	2.6	2.3	2.0	2.4	2.2	2.4	2.2	2.2	2.2	2.1	2.0	2.2	2.3	2.1	2.5
Agricultural wage and salary workers	9.1	8.3	8.0	8.0	8.4	8.2	7.4	7.9	6.7	7.6	8.3	9.6	11.3	9.5	9.7
Educational attainment[1]															
Less than a high school diploma	8.1	7.1	7.1	6.9	7.1	7.1	7.1	6.9	6.9	7.1	7.0	7.4	7.5	6.1	6.6
High school graduates, no college	4.3	4.0	3.9	3.8	4.0	4.1	4.0	4.0	4.0	3.9	3.8	3.5	3.4	3.4	3.5
Some college, less than a bachelor's degree	3.3	3.0	2.7	3.1	2.9	3.0	2.8	3.0	3.0	2.8	2.8	2.9	3.1	2.8	3.0
College graduates	2.0	1.8	1.7	1.7	1.8	1.7	1.8	1.7	1.9	1.8	1.8	1.8	1.9	1.9	2.1

[1] Data refer to persons 25 years and over.

7. Duration of unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Less than 5 weeks	2,538	2,622	2,626	2,608	2,553	2,626	2,652	2,638	2,754	2,546	2,614	2,353	2,601	2,478	2,788
5 to 14 weeks	2,138	1,950	1,929	1,967	2,022	1,975	1,956	1,968	1,896	1,983	1,839	2,071	1,944	1,891	1,867
15 weeks and over	2,062	1,637	1,461	1,509	1,641	1,606	1,644	1,636	1,598	1,611	1,578	1,469	1,550	1,434	1,446
15 to 26 weeks	995	763	605	671	833	783	810	732	732	752	754	753	766	736	773
27 weeks and over	1,067	875	856	838	808	823	834	904	866	859	824	716	784	697	673
Mean duration, in weeks	15.8	14.5	14.5	14.7	14.1	14.3	13.7	14.3	14.1	14.4	14.1	13.4	13.8	13.5	13.1
Median duration, in weeks	8.0	6.7	6.6	6.1	6.7	6.7	6.8	6.6	5.9	6.7	6.7	6.9	7.0	6.9	6.1

8. Unemployed persons by reason for unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Job losers[1]	3,037	2,822	2,706	2,822	2,832	2,865	2,834	2,865	2,813	2,758	2,754	2,696	2,738	2,563	2,700
On temporary layoff	931	866	723	816	851	931	937	909	857	850	841	864	849	812	838
Not on temporary layoff	2,106	1,957	1,983	2,006	1,981	1,934	1,897	1,956	1,956	1,908	1,913	1,832	1,889	1,751	1,862
Job leavers	795	734	641	749	754	770	734	727	730	677	709	699	751	780	841
Reentrants	2,338	2,132	2,115	2,081	2,112	2,072	2,124	2,161	2,142	2,130	2,031	1,993	2,110	1,988	2,044
New entrants	569	520	518	505	517	474	507	501	577	534	504	537	509	431	469
Percent of unemployed															
Job losers[1]	45.1	45.5	45.3	45.8	45.6	46.4	45.7	45.8	44.9	45.2	45.9	45.5	44.8	44.5	44.6
On temporary layoff	13.8	13.9	12.1	13.3	13.7	15.1	15.1	14.5	13.7	13.9	14.0	14.6	13.9	14.1	13.9
Not on temporary layoff	31.3	31.5	33.2	32.6	31.9	31.3	30.6	31.3	31.2	31.3	31.9	30.9	30.9	30.4	30.8
Job leavers	11.8	11.8	10.7	12.2	12.1	12.5	11.8	11.6	11.7	11.1	11.8	11.8	12.3	13.5	13.9
Reentrants	34.7	34.3	35.4	33.8	34.0	33.5	34.3	34.6	34.2	34.9	33.9	33.6	34.5	34.5	33.8
New entrants	8.4	8.4	8.7	8.2	8.3	7.7	8.2	8.0	9.2	8.8	8.4	9.1	8.3	7.5	7.7
Percent of civilian labor force															
Job losers[1]	2.2	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	1.9	2.0	1.8	1.9
Job leavers	.6	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.6	.6
Reentrants	1.7	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.5	1.4	1.5
New entrants	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.3	.3

[1] Includes persons who completed temporary jobs.

9. Unemployment rates by sex and age, monthly data seasonally adjusted

[Civilian workers]

Sex and age	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Total, 16 years and over	4.9	4.5	4.3	4.4	4.5	4.5	4.5	4.5	4.5	4.4	4.3	4.3	4.4	4.2	4.3
16 to 24 years	11.3	10.4	9.8	10.2	10.6	10.4	10.8	10.9	10.5	9.9	9.8	10.1	10.2	10.0	10.0
16 to 19 years	16.0	14.6	13.5	14.3	14.8	14.2	14.9	15.2	15.7	15.0	14.0	15.5	14.1	14.3	14.1
16 to 17 years	18.2	17.2	15.7	16.3	18.0	15.7	17.1	17.6	18.2	18.0	16.9	18.4	15.5	16.6	16.9
18 to 19 years	14.5	12.8	12.1	13.1	12.6	13.1	13.5	13.5	14.0	13.0	12.1	13.1	13.1	12.8	12.3
20 to 24 years	8.5	7.9	7.6	7.7	8.1	8.2	8.4	8.2	7.3	6.9	7.2	6.9	7.7	7.4	7.6
25 years and over	3.8	3.4	3.3	3.3	3.4	3.4	3.3	3.4	3.4	3.3	3.3	3.2	3.3	3.1	3.2
25 to 54 years	3.9	3.5	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.4	3.4	3.3	3.4	3.1	3.3
55 years and over	3.0	2.7	2.6	2.5	2.6	2.8	2.6	2.7	2.7	3.0	3.0	2.9	2.9	2.9	2.9
Men, 16 years and over	4.9	4.4	4.1	4.3	4.4	4.5	4.4	4.5	4.4	4.3	4.3	4.2	4.3	3.9	4.1
16 to 24 years	11.8	11.1	10.0	11.1	11.1	11.3	11.3	11.9	10.9	10.3	10.8	10.7	10.1	9.9	10.5
16 to 19 years	16.9	16.2	14.2	15.9	15.9	15.9	15.9	17.4	16.7	16.5	16.4	16.9	14.6	15.0	14.8
16 to 17 years	19.1	19.1	15.9	18.3	20.5	18.0	18.9	20.2	20.9	20.0	19.9	19.7	15.3	16.9	19.2
18 to 19 years	15.4	14.1	13.5	14.5	12.9	14.3	14.2	15.1	13.7	14.4	14.0	14.7	14.1	13.6	12.2
20 to 24 years	8.9	8.1	7.6	8.3	8.3	8.5	8.5	8.6	7.5	6.6	7.3	7.1	7.5	7.0	8.0
25 years and over	3.6	3.2	3.0	3.1	3.2	3.3	3.2	3.2	3.2	3.1	3.2	3.0	3.2	2.7	2.9
25 to 54 years	3.7	3.3	3.1	3.2	3.3	3.4	3.3	3.2	3.3	3.1	3.2	3.1	3.3	2.8	2.9
55 years and over	3.1	2.8	2.7	2.5	2.5	3.0	2.6	3.0	2.9	3.1	3.1	2.8	3.0	2.6	2.6
Women, 16 years and over	5.0	4.6	4.6	4.5	4.7	4.5	4.7	4.5	4.7	4.6	4.3	4.3	4.5	4.5	4.6
16 to 24 years	10.7	9.8	9.5	9.2	10.1	9.5	10.4	9.8	10.1	9.5	8.7	9.5	10.2	10.0	9.5
16 to 19 years	15.0	12.9	12.6	12.6	13.6	12.2	13.8	12.9	14.8	13.3	11.3	13.9	13.7	13.6	13.4
16 to 17 years	17.2	15.1	15.5	14.2	15.1	13.2	15.5	14.9	15.4	15.9	13.8	16.9	15.7	16.2	14.5
18 to 19 years	13.6	11.5	10.6	11.6	12.3	11.7	12.8	11.9	14.3	11.4	10.2	11.5	12.1	11.9	12.5
20 to 24 years	8.1	7.8	7.6	7.0	7.9	7.7	8.2	7.8	7.1	7.1	7.1	6.7	8.0	7.8	7.1
25 years and over	3.9	3.6	3.6	3.6	3.6	3.5	3.5	3.6	3.6	3.6	3.5	3.4	3.3	3.4	3.6
25 to 54 years	4.1	3.8	3.8	3.7	3.7	3.6	3.7	3.7	3.8	3.8	3.6	3.5	3.5	3.5	3.7
55 years and over	2.9	2.6	2.4	2.5	2.6	2.6	2.7	2.3	2.5	2.9	2.8	3.1	2.7	3.2	3.3

10. Unemployment rates by State, seasonally adjusted

State	Mar. 1998	Feb. 1999	Mar. 1999[p]	State	Mar. 1998	Feb. 1999	Mar. 1999[p]
Alabama	4.4	3.9	4.4	Missouri	4.7	2.7	2.9
Alaska	5.9	6.4	6.3	Montana	5.7	5.4	5.4
Arizona	4.3	4.0	4.2	Nebraska	2.9	2.4	2.3
Arkansas	5.8	4.7	4.4	Nevada	4.8	3.4	3.7
California	6.0	5.6	5.8	New Hampshire	3.1	3.0	3.0
Colorado	3.9	2.7	2.7	New Jersey	4.7	4.1	4.5
Connecticut	3.5	3.1	3.1	New Mexico	6.0	6.3	6.2
Delaware	4.0	3.1	3.1	New York	5.8	5.3	5.0
District of Columbia	9.3	7.4	7.2	North Carolina	3.7	3.1	3.2
Florida	4.4	4.3	4.1	North Dakota	3.6	2.8	2.9
Georgia	4.4	4.1	4.2	Ohio	4.2	4.2	3.9
Hawaii	6.4	6.0	5.9	Oklahoma	4.5	4.1	4.2
Idaho	5.2	4.6	4.7	Oregon	5.5	5.7	5.6
Illinois	4.5	4.0	3.8	Pennsylvania	4.8	4.4	4.4
Indiana	3.3	2.9	2.6	Rhode Island	5.3	3.9	3.0
Iowa	2.9	2.6	2.7	South Carolina	3.4	4.2	3.7
Kansas	3.9	3.3	3.4	South Dakota	3.0	2.5	2.5
Kentucky	4.8	4.2	4.3	Tennessee	4.4	4.4	4.3
Louisiana	5.8	5.6	5.1	Texas	4.7	4.6	4.5
Maine	4.6	3.3	3.4	Utah	3.9	3.2	3.4
Maryland	4.8	3.8	3.7	Vermont	3.6	3.2	3.1
Massachusetts	3.5	2.9	2.8	Virginia	2.9	2.6	2.8
Michigan	3.9	4.0	3.9	Washington	4.6	4.9	4.6
Minnesota	2.7	2.4	2.2	West Virginia	7.2	5.7	6.7
Mississippi	5.7	4.3	5.1	Wisconsin	3.2	3.4	3.2
				Wyoming	4.9	4.6	4.3

[p] = preliminary

11. Employment of workers on nonfarm payrolls by State, seasonally adjusted

[In thousands]

State	Mar. 1998	Feb. 1999	Mar. 1999[p]	State	Mar. 1998	Feb. 1999	Mar. 1999[p]
Alabama	1,891.2	1,929.8	1,930.6	Missouri	2,665.5	2,706.4	2,704.7
Alaska	274.9	277.5	277.2	Montana	371.0	378.2	379.8
Arizona	2,049.4	2,117.3	2,126.0	Nebraska	865.6	879.6	876.2
Arkansas	1,119.0	1,131.9	1,132.6	Nevada	909.5	949.9	951.7
California	13,448.8	13,833.8	13,851.9	New Hampshire	587.0	595.7	596.6
Colorado	2,033.8	2,084.8	2,090.0	New Jersey	3,780.0	3,840.3	3,846.7
Connecticut	1,638.4	1,663.4	1,663.5	New Mexico	719.6	726.7	729.5
Delaware	396.5	408.8	408.4	New York	8,193.3	8,328.0	8,333.2
District of Columbia	614.7	615.3	615.1	North Carolina	3,730.2	3,830.3	3,827.4
Florida	6,580.2	6,825.1	6,837.5	North Dakota	320.5	319.4	319.4
Georgia	3,706.1	3,813.7	3,829.7	Ohio	5,457.3	5,499.2	5,500.4
Hawaii	528.7	527.5	527.6	Oklahoma	1,430.9	1,459.9	1,464.6
Idaho	518.5	537.2	537.6	Oregon	1,549.7	1,580.1	1,582.9
Illinois	5,851.9	5,942.8	5,946.0	Pennsylvania	5,480.4	5,532.1	5,536.9
Indiana	2,897.6	2,954.5	2,958.3	Rhode Island	455.7	459.9	460.8
Iowa	1,433.0	1,467.2	1,466.0	South Carolina	1,769.0	1,821.1	1,822.3
Kansas	1,298.0	1,334.7	1,334.5	South Dakota	359.1	366.4	365.7
Kentucky	1,739.1	1,773.8	1,776.0	Tennessee	2,619.5	2,652.7	2,640.5
Louisiana	1,882.3	1,909.7	1,912.4	Texas	8,861.5	9,099.4	9,122.9
Maine	565.5	579.9	580.8	Utah	1,015.0	1,040.1	1,041.4
Maryland	2,310.5	2,361.3	2,362.3	Vermont	284.6	288.8	289.6
Massachusetts	3,163.0	3,203.9	3,211.0	Virginia	3,281.1	3,358.3	3,361.8
Michigan	4,501.9	4,537.4	4,551.7	Washington	2,574.2	2,631.6	2,637.3
Minnesota	2,542.8	2,589.9	2,589.8	West Virginia	714.4	728.9	726.3
Mississippi	1,125.9	1,135.5	1,136.1	Wisconsin	2,699.3	2,730.9	2,734.8
				Wyoming	228.0	230.3	229.6

[p] = preliminary

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the data base.

12. Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.[P]	Apr.[P]
TOTAL	122,690	125,832	125,234	125,562	125,751	125,869	126,191	126,363	126,527	126,804	127,118	127,335	127,670	127,677	127,911
PRIVATE SECTOR	103,120	105,970	105,470	105,734	105,938	106,043	106,269	106,435	106,579	106,818	107,096	107,290	107,563	107,548	107,774
GOODS-PRODUCING	24,934	25,256	25,339	25,301	25,304	25,135	25,253	25,241	25,209	25,184	25,269	25,251	25,266	25,182	25,155
Mining	592	575	582	579	578	571	571	568	564	560	557	547	539	537	531
Metal mining	54	51	51	51	51	50	50	50	50	50	50	51	51	50	50
Oil and gas extraction	335	326	332	329	330	325	323	321	317	312	308	299	292	293	288
Nonmetallic minerals, except fuels	108	108	107	107	107	107	108	108	108	108	109	108	108	107	108
Construction	5,686	5,965	5,930	5,917	5,946	5,970	5,989	5,981	6,012	6,051	6,153	6,170	6,249	6,196	6,204
General building contractors	1,316	1,399	1,385	1,388	1,401	1,410	1,413	1,410	1,419	1,414	1,433	1,448	1,460	1,458	1,446
Heavy construction, except building	795	824	819	819	821	828	829	820	825	834	861	862	864	846	855
Special trades contractors	3,575	3,743	3,726	3,710	3,724	3,732	3,747	3,751	3,768	3,803	3,859	3,860	3,925	3,892	3,903
Manufacturing	18,657	18,716	18,827	18,805	18,780	18,594	18,693	18,692	18,633	18,573	18,559	18,534	18,478	18,449	18,420
Production workers	12,896	12,896	13,007	12,971	12,943	12,746	12,836	12,865	12,821	12,765	12,763	12,740	12,700	12,684	12,658
Durable goods	10,987	11,097	11,170	11,156	11,144	10,989	11,106	11,090	11,059	11,011	10,996	10,974	10,948	10,935	10,917
Production workers	7,539	7,597	7,666	7,642	7,626	7,468	7,577	7,584	7,566	7,522	7,519	7,494	7,478	7,480	7,464
Lumber and wood products	793	804	802	803	801	802	802	805	806	809	813	818	819	819	817
Furniture and fixtures	510	524	524	526	524	528	526	524	524	524	527	527	528	529	529
Stone, clay, and glass products	552	563	561	559	562	561	564	564	564	568	571	568	571	568	569
Primary metal industries	711	711	718	716	717	706	714	712	706	699	698	694	694	693	693
Fabricated metal products	1,475	1,489	1,498	1,495	1,490	1,477	1,490	1,487	1,486	1,481	1,480	1,484	1,480	1,478	1,475
Industrial machinery and equipment	2,163	2,189	2,201	2,201	2,202	2,193	2,190	2,185	2,175	2,162	2,152	2,133	2,131	2,123	2,119
Computer and office equipment	375	375	377	376	375	375	373	374	371	370	367	359	358	356	358
Electronic and other electrical equipment	1,688	1,700	1,720	1,716	1,714	1,701	1,694	1,688	1,680	1,668	1,664	1,657	1,653	1,654	1,653
Electronic components and accessories	652	667	678	677	672	667	661	659	654	649	646	642	642	643	642
Transportation equipment	1,842	1,874	1,890	1,886	1,882	1,772	1,884	1,883	1,887	1,877	1,871	1,874	1,856	1,858	1,850
Motor vehicles and equipment	985	988	1,004	998	993	878	995	995	1,000	998	990	996	985	988	993
Aircraft and parts	500	523	525	524	524	526	526	524	523	519	518	516	509	509	503
Instruments and related products	863	859	867	866	864	861	857	855	850	845	842	841	839	836	833
Miscellaneous manufacturing industries	389	386	389	388	388	388	385	387	381	378	378	378	377	377	379
Nondurable goods	7,670	7,619	7,657	7,649	7,636	7,605	7,587	7,602	7,574	7,562	7,563	7,560	7,530	7,514	7,503
Production workers	5,357	5,299	5,341	5,329	5,317	5,278	5,259	5,281	5,255	5,243	5,244	5,246	5,222	5,204	5,194
Food and kindred products	1,691	1,705	1,708	1,710	1,706	1,696	1,690	1,704	1,702	1,710	1,718	1,723	1,718	1,715	1,714
Tobacco products	41	40	42	41	40	40	40	39	40	40	39	40	39	39	37
Textile mill products	616	596	605	603	599	594	591	593	589	584	581	578	573	570	565
Apparel and other textile products	826	771	787	780	776	772	762	761	746	736	734	727	714	711	705
Paper and allied products	685	682	686	685	682	680	680	679	677	674	673	672	672	670	670
Printing and publishing	1,553	1,566	1,565	1,566	1,570	1,571	1,568	1,568	1,569	1,566	1,561	1,563	1,560	1,559	1,557
Chemicals and allied products	1,034	1,036	1,035	1,039	1,037	1,038	1,036	1,036	1,034	1,035	1,035	1,032	1,033	1,030	1,031
Petroleum and coal products	140	136	137	136	137	135	134	135	134	134	136	134	134	134	134
Rubber and miscellaneous plastics products	995	1,006	1,008	1,006	1,006	998	1,006	1,007	1,004	1,005	1,008	1,014	1,012	1,012	1,017
Leather and leather products	90	82	84	83	83	81	80	80	79	78	78	77	75	74	73
SERVICE-PRODUCING	97,756	100,576	99,895	100,261	100,447	100,734	100,938	101,122	101,318	101,620	101,849	102,084	102,404	102,495	102,756
Transportation and public utilities	6,395	6,549	6,513	6,534	6,538	6,550	6,570	6,579	6,595	6,604	6,627	6,644	6,653	6,665	6,687
Transportation	4,106	4,208	4,173	4,191	4,196	4,208	4,235	4,237	4,247	4,249	4,262	4,273	4,276	4,287	4,307
Railroad transportation	227	232	231	232	232	231	232	234	234	231	233	236	234	234	232
Local and interurban passenger transit	451	462	453	459	458	466	469	466	467	468	468	467	469	470	477
Trucking and warehousing	1,667	1,707	1,702	1,703	1,709	1,709	1,719	1,716	1,721	1,721	1,730	1,741	1,740	1,746	1,751
Water transportation	180	186	181	185	183	188	192	191	191	193	191	190	189	185	188
Transportation by air	1,128	1,157	1,147	1,151	1,154	1,154	1,161	1,166	1,167	1,167	1,169	1,168	1,176	1,183	1,187
Pipelines, except natural gas	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Transportation services	439	449	445	447	446	446	448	450	453	455	457	457	454	455	458
Communications and public utilities	2,290	2,341	2,340	2,343	2,342	2,342	2,335	2,342	2,348	2,355	2,365	2,371	2,377	2,378	2,380
Communications	1,424	1,487	1,484	1,486	1,488	1,488	1,483	1,490	1,498	1,502	1,512	1,522	1,528	1,528	1,533
Electric, gas, and sanitary services	866	855	856	857	854	854	852	852	850	853	853	849	849	850	847
Wholesale trade	6,648	6,825	6,798	6,815	6,821	6,827	6,838	6,862	6,864	6,877	6,882	6,907	6,917	6,923	6,934
Retail trade	22,011	22,475	22,335	22,423	22,448	22,547	22,545	22,592	22,589	22,672	22,712	22,755	22,855	22,831	22,897
Building materials and garden supplies	937	976	971	972	975	977	979	984	987	991	997	1,003	1,012	1,014	1,008
General merchandise stores	2,718	2,790	2,784	2,788	2,784	2,790	2,784	2,800	2,812	2,842	2,823	2,847	2,842	2,860	2,838
Department stores	2,389	2,460	2,447	2,462	2,457	2,454	2,459	2,466	2,481	2,504	2,490	2,514	2,510	2,527	2,515

See footnotes at end of table.

12. Continued—Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.[p]	Apr.[p]
Food stores	3,496	3,545	3,533	3,542	3,538	3,552	3,551	3,557	3,554	3,558	3,561	3,548	3,561	3,565	3,572
Automotive dealers and service stations	2,314	2,351	2,337	2,345	2,351	2,355	2,354	2,361	2,367	2,370	2,377	2,384	2,398	2,397	2,403
New and used car dealers	1,051	1,063	1,058	1,060	1,064	1,066	1,064	1,065	1,067	1,069	1,073	1,074	1,078	1,081	1,087
Apparel and accessory stores	1,098	1,105	1,105	1,106	1,108	1,111	1,112	1,109	1,101	1,105	1,101	1,108	1,125	1,123	1,120
Furniture and home furnishings stores	1,009	1,062	1,045	1,055	1,058	1,063	1,070	1,071	1,076	1,082	1,084	1,094	1,103	1,108	1,117
Eating and drinking places	7,636	7,746	7,681	7,714	7,726	7,781	7,770	7,790	7,778	7,807	7,854	7,838	7,860	7,800	7,864
Miscellaneous retail establishments	2,804	2,901	2,879	2,901	2,908	2,918	2,925	2,920	2,914	2,917	2,915	2,933	2,954	2,964	2,975
Finance, insurance, and real estate	7,091	7,341	7,289	7,311	7,333	7,370	7,372	7,393	7,417	7,441	7,458	7,488	7,495	7,501	7,524
Finance	3,413	3,553	3,521	3,536	3,547	3,565	3,572	3,578	3,598	3,605	3,615	3,628	3,632	3,638	3,655
Depository institutions	2,027	2,041	2,041	2,044	2,042	2,042	2,042	2,038	2,043	2,043	2,046	2,051	2,052	2,053	2,056
Commercial banks	1,460	1,460	1,463	1,463	1,459	1,459	1,457	1,456	1,456	1,455	1,457	1,460	1,461	1,460	1,461
Savings institutions	262	264	263	264	264	265	264	264	265	265	264	266	266	266	265
Nondepository institutions	567	620	605	611	616	624	628	630	640	649	652	659	661	664	672
Security and commodity brokers	597	649	636	641	648	655	657	662	666	663	666	667	665	667	673
Holding and other investment offices	222	243	239	240	241	244	245	248	249	250	251	251	254	254	254
Insurance	2,260	2,328	2,312	2,320	2,328	2,337	2,339	2,346	2,350	2,357	2,360	2,363	2,365	2,369	2,372
Insurance carriers	1,535	1,586	1,574	1,579	1,586	1,594	1,595	1,599	1,601	1,606	1,610	1,613	1,612	1,614	1,613
Insurance agents, brokers, and service	724	743	738	741	742	743	744	747	749	751	750	750	753	755	759
Real estate	1,419	1,460	1,456	1,455	1,458	1,468	1,461	1,469	1,469	1,479	1,483	1,497	1,498	1,494	1,497
Services[1]	36,040	37,525	37,196	37,350	37,494	37,614	37,691	37,768	37,905	38,040	38,148	38,245	38,377	38,446	38,577
Agricultural services	679	714	706	700	706	713	718	719	722	737	751	758	763	754	755
Hotels and other lodging places	1,744	1,771	1,767	1,769	1,773	1,781	1,786	1,781	1,783	1,777	1,776	1,780	1,778	1,779	1,776
Personal services	1,182	1,181	1,186	1,190	1,186	1,184	1,185	1,179	1,178	1,180	1,186	1,186	1,176	1,175	1,183
Business services	7,983	8,546	8,422	8,491	8,556	8,565	8,619	8,605	8,677	8,715	8,756	8,792	8,846	8,874	8,925
Services to buildings	937	976	965	975	975	980	978	986	987	989	991	1,000	999	998	1,003
Personnel supply services	2,968	3,161	3,140	3,156	3,189	3,151	3,178	3,152	3,161	3,177	3,202	3,218	3,245	3,250	3,269
Help supply services	2,646	2,824	2,806	2,818	2,853	2,815	2,850	2,818	2,829	2,840	2,857	2,866	2,890	2,897	2,915
Computer and data processing services	1,411	1,603	1,561	1,578	1,601	1,622	1,632	1,643	1,661	1,680	1,691	1,709	1,725	1,734	1,750
Auto repair services and parking	1,124	1,159	1,146	1,153	1,159	1,162	1,167	1,168	1,169	1,175	1,177	1,183	1,189	1,188	1,188
Miscellaneous repair services	376	386	383	385	387	385	386	388	389	391	393	396	395	395	396
Motion pictures	548	565	563	567	554	564	566	568	567	563	564	559	569	567	579
Amusement and recreation services	1,573	1,688	1,660	1,662	1,670	1,694	1,705	1,717	1,718	1,744	1,742	1,748	1,746	1,746	1,759
Health services	9,720	9,904	9,873	9,887	9,905	9,902	9,919	9,937	9,947	9,955	9,955	9,959	9,976	9,990	10,013
Offices and clinics of medical doctors	1,743	1,817	1,801	1,806	1,813	1,817	1,828	1,835	1,843	1,849	1,845	1,856	1,859	1,864	1,869
Nursing and personal care facilities	1,755	1,757	1,760	1,762	1,761	1,756	1,754	1,758	1,755	1,753	1,751	1,753	1,751	1,749	1,748
Hospitals	3,869	3,953	3,938	3,945	3,953	3,960	3,966	3,971	3,977	3,978	3,980	3,978	3,985	3,988	3,995
Home health care services	713	680	687	684	683	673	670	667	662	661	661	652	660	662	665
Legal services	947	982	972	977	980	984	985	991	995	994	997	997	1,000	1,001	1,005
Educational services	2,114	2,207	2,192	2,195	2,200	2,205	2,198	2,218	2,238	2,245	2,252	2,240	2,262	2,270	2,271
Social services	2,514	2,628	2,595	2,609	2,627	2,657	2,632	2,652	2,659	2,672	2,686	2,697	2,711	2,718	2,727
Child day care services	570	581	577	575	581	583	586	583	583	586	589	592	597	598	598
Residential care	717	751	746	749	747	749	752	758	762	764	766	770	774	776	778
Museums and botanical and zoological gardens	90	92	92	91	91	91	92	92	92	94	94	94	94	94	94
Membership organizations	2,248	2,271	2,265	2,266	2,270	2,272	2,273	2,276	2,281	2,279	2,283	2,290	2,293	2,298	2,298
Engineering and management services	3,005	3,236	3,178	3,212	3,234	3,259	3,264	3,280	3,293	3,321	3,338	3,367	3,380	3,399	3,410
Engineering and architectural services	869	918	910	913	921	925	927	926	927	932	934	937	942	943	946
Management and public relations	944	1,046	1,011	1,029	1,037	1,052	1,055	1,066	1,075	1,092	1,098	1,113	1,119	1,132	1,136
Government	19,570	19,862	19,764	19,828	19,813	19,826	19,922	19,928	19,948	19,986	20,022	20,045	20,107	20,129	20,137
Federal	2,699	2,686	2,674	2,671	2,674	2,672	2,683	2,687	2,713	2,725	2,706	2,702	2,712	2,709	2,686
Federal, except Postal Service	1,842	1,819	1,814	1,810	1,813	1,810	1,816	1,813	1,834	1,845	1,818	1,825	1,836	1,832	1,810
State	4,594	4,648	4,620	4,637	4,632	4,645	4,661	4,680	4,671	4,674	4,690	4,685	4,711	4,716	4,725
Education	1,912	1,939	1,925	1,932	1,933	1,938	1,949	1,960	1,949	1,945	1,957	1,947	1,969	1,971	1,977
Other State government	2,682	2,709	2,695	2,705	2,699	2,707	2,712	2,720	2,722	2,729	2,733	2,738	2,742	2,745	2,748
Local	12,276	12,527	12,470	12,520	12,507	12,509	12,578	12,561	12,564	12,587	12,626	12,658	12,684	12,704	12,726
Education	6,913	7,070	7,023	7,053	7,045	7,078	7,128	7,088	7,083	7,114	7,133	7,155	7,171	7,189	7,198
Other local government	5,363	5,457	5,447	5,467	5,462	5,431	5,450	5,473	5,481	5,473	5,493	5,503	5,513	5,515	5,528

[1] Includes other industries not shown separately.

[p] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

13. Average weekly hours of production or nonsupervisory workers on private nonfarm payrolls, by industry, monthly data seasonally adjusted

Industry	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.[p]	Apr.[p]
PRIVATE SECTOR	34.6	34.6	34.5	34.7	34.6	34.6	34.6	34.4	34.6	34.5	34.6	34.5	34.6	34.4	34.5
GOODS-PRODUCING	41.3	41.0	40.8	41.1	41.0	41.1	41.1	40.8	41.1	41.0	41.2	41.1	41.0	40.7	40.9
MINING	45.4	43.9	44.1	44.6	43.8	44.8	43.8	43.2	43.8	43.5	43.4	42.7	43.0	42.9	43.8
MANUFACTURING	42.0	41.7	41.4	41.8	41.8	41.7	41.7	41.6	41.7	41.7	41.7	41.6	41.6	41.5	41.7
Overtime hours	4.8	4.6	4.5	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.6	4.5	4.5	4.4
Durable goods	42.8	42.3	41.9	42.4	42.3	42.2	42.3	42.2	42.3	42.3	42.3	42.1	42.2	42.0	42.2
Overtime hours	5.1	4.8	4.6	4.8	4.8	4.8	4.8	4.7	4.6	4.6	4.6	4.7	4.6	4.6	4.5
Lumber and wood products	41.0	41.1	41.2	41.2	41.3	41.2	41.2	40.6	41.1	41.2	41.6	41.8	41.0	41.3	41.2
Furniture and fixtures	40.2	40.5	40.7	40.7	41.0	40.7	40.7	40.1	40.4	40.1	40.2	40.5	40.3	40.3	40.6
Stone, clay, and glass products	43.2	43.4	43.3	43.5	43.2	43.5	43.6	43.3	43.4	43.5	43.8	44.0	43.4	42.8	43.2
Primary metal industries	44.9	44.2	43.9	44.5	44.4	43.6	44.1	43.7	43.7	43.9	43.7	43.7	43.7	43.8	43.8
Blast furnaces and basic steel products	44.9	44.6	44.9	45.6	45.1	43.8	44.5	44.2	43.9	43.7	43.2	43.9	43.8	44.0	44.1
Fabricated metal products	42.6	42.3	41.8	42.6	42.5	42.4	42.3	42.3	42.3	42.1	42.2	41.9	42.1	42.0	42.1
Industrial machinery and equipment	43.6	42.8	42.6	43.0	43.2	43.0	43.1	42.7	42.7	42.4	42.1	42.1	42.1	41.9	42.0
Electronic and other electrical equipment	42.0	41.4	41.1	41.4	41.4	41.3	41.7	41.5	41.5	41.4	41.1	41.1	41.3	40.9	41.2
Transportation equipment	44.5	43.4	42.1	43.3	42.7	42.6	42.6	43.7	43.7	44.1	44.6	43.3	44.1	43.8	44.0
Motor vehicles and equipment	45.0	43.5	42.0	43.3	42.4	41.7	42.3	44.3	43.8	44.7	45.2	44.1	45.3	44.8	45.4
Instruments and related products	42.0	41.3	41.3	41.4	41.3	41.3	41.4	41.0	41.1	41.0	41.0	41.2	41.4	41.3	41.6
Miscellaneous manufacturing	40.4	39.9	40.1	40.0	40.0	40.0	40.1	39.6	39.7	39.3	39.4	39.5	39.7	39.8	39.6
Nondurable goods	40.9	40.9	40.7	41.0	40.9	41.0	40.9	40.8	40.9	40.8	40.9	40.8	40.8	40.8	40.9
Overtime hours	4.4	4.3	4.2	4.4	4.4	4.4	4.3	4.3	4.3	4.4	4.3	4.4	4.4	4.4	4.3
Food and kindred products	41.3	41.7	41.3	41.8	41.7	42.0	41.5	41.7	41.5	41.7	42.0	42.0	41.8	41.7	41.8
Textile mill products	41.4	41.0	41.0	41.3	41.1	41.0	41.0	40.4	41.1	40.7	40.9	40.9	40.6	40.4	40.9
Apparel and other textile products	37.3	37.3	37.7	37.4	37.4	37.4	37.5	37.3	37.3	37.3	37.3	36.9	37.6	37.4	37.5
Paper and allied products	43.7	43.4	43.0	43.5	43.6	43.5	43.3	43.6	43.5	43.5	43.4	43.4	43.4	43.7	43.6
Printing and publishing	38.5	38.3	38.2	38.4	38.2	38.4	38.5	38.1	38.2	38.2	38.1	38.3	38.0	37.9	38.1
Chemicals and allied products	43.2	43.2	43.1	43.1	43.2	43.0	43.3	43.2	43.3	43.0	42.6	42.8	42.8	42.9	42.9
Rubber and miscellaneous plastics products	41.8	41.7	41.7	42.1	42.0	42.1	41.6	41.7	41.8	41.6	41.7	41.3	41.6	41.8	41.6
Leather and leather products	38.4	37.6	37.3	37.3	37.6	37.0	38.1	37.4	37.4	37.6	37.5	37.1	37.9	37.5	37.8
SERVICE-PRODUCING	32.9	32.9	32.9	33.0	32.9	32.9	32.9	32.8	32.9	32.9	32.9	32.9	33.0	32.8	32.9
TRANSPORTATION AND PUBLIC UTILITIES	39.7	39.5	39.6	39.8	39.5	39.6	39.3	39.3	39.3	39.3	39.1	39.5	39.2	39.2	39.0
WHOLESALE TRADE	38.4	38.4	38.3	38.5	38.2	38.3	38.4	38.2	38.3	38.5	38.4	38.4	38.5	38.5	38.5
RETAIL TRADE	28.9	29.1	29.0	29.1	29.0	29.1	29.0	29.0	29.1	29.0	29.0	29.0	29.2	29.0	29.1

[p] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

14. Average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry, seasonally adjusted

Industry	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.[p]	Apr.[p]
PRIVATE SECTOR (in current dollars)	$ 12.28	$ 12.77	$12.70	$12.73	$12.76	$12.79	$12.85	$12.87	$12.90	$12.94	$12.98	$13.03	$13.05	$13.08	$13.11
Goods-producing	13.92	14.33	14.25	14.27	14.28	14.31	14.39	14.39	14.43	14.46	14.50	14.51	14.54	14.59	14.66
Mining	16.17	16.95	16.72	16.77	16.73	16.88	17.10	17.15	17.20	17.37	17.26	17.09	16.98	17.04	16.93
Construction	16.03	16.56	16.45	16.46	16.51	16.64	16.67	16.57	16.69	16.75	16.82	16.74	16.76	16.89	16.94
Manufacturing	13.17	13.49	13.44	13.47	13.47	13.42	13.52	13.57	13.57	13.58	13.58	13.63	13.66	13.71	13.78
Excluding overtime	12.45	12.79	12.76	12.78	12.76	12.71	12.81	12.90	12.88	12.89	12.89	12.93	12.97	12.99	13.03
Service-producing	11.73	12.26	12.19	12.23	12.26	12.30	12.35	12.38	12.41	12.45	12.49	12.56	12.57	12.60	12.62
Transportation and public utilities	14.93	15.34	15.32	15.31	15.29	15.33	15.35	15.42	15.42	15.45	15.53	15.55	15.55	15.56	15.66
Wholesale trade	13.44	14.01	13.88	14.00	13.98	14.07	14.16	14.14	14.19	14.23	14.26	14.35	14.30	14.30	14.17
Retail trade	8.34	8.75	8.70	8.72	8.73	8.78	8.83	8.86	8.85	8.85	8.91	8.96	8.97	8.95	8.95
Finance, insurance, and real estate	13.33	14.06	14.00	14.03	14.07	14.10	14.16	14.17	14.24	14.35	14.43	14.49	14.50	14.52	14.61
Services	12.28	12.84	12.76	12.81	12.87	12.90	12.95	12.99	13.03	13.06	13.09	13.18	13.22	13.27	13.32
PRIVATE SECTOR (in constant (1982) dollars)	7.55	7.75	7.73	7.73	7.75	7.75	7.78	7.79	7.79	7.80	7.81	7.83	7.84	7.85	–

– Data not available.

[p] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

15. Average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry

Industry	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.[P]	Apr.[P]
PRIVATE SECTOR	$12.28	$12.77	$12.69	$12.70	$12.66	$12.66	$12.74	$12.89	$12.92	$12.99	$12.99	$13.09	$13.09	$13.09	$13.12
MINING	16.17	16.95	16.84	16.73	16.73	16.81	16.94	17.16	17.14	17.34	17.35	17.28	17.13	17.09	17.01
CONSTRUCTION	16.03	16.56	16.34	16.42	16.44	16.63	16.74	16.76	16.86	16.79	16.84	16.72	16.63	16.76	16.83
MANUFACTURING	13.17	13.49	13.46	13.47	13.43	13.37	13.44	13.60	13.54	13.60	13.69	13.66	13.66	13.72	13.80
Durable goods	13.73	13.99	13.96	13.98	13.94	13.77	13.93	14.08	14.03	14.08	14.17	14.12	14.13	14.20	14.26
Lumber and wood products	10.77	11.11	10.99	11.06	11.10	11.18	11.19	11.19	11.23	11.25	11.34	11.30	11.27	11.32	11.38
Furniture and fixtures	10.55	10.89	10.85	10.79	10.81	10.90	10.95	10.98	10.99	10.98	11.10	11.10	11.05	11.09	11.13
Stone, clay, and glass products	13.18	13.60	13.63	13.58	13.58	13.60	13.63	13.82	13.68	13.66	13.71	13.67	13.65	13.70	13.77
Primary metal industries	15.22	15.48	15.66	15.54	15.53	15.56	15.44	15.61	15.31	15.35	15.35	15.39	15.40	15.50	15.58
Blast furnaces and basic steel products	18.03	18.43	18.66	18.55	18.53	18.49	18.46	18.75	18.21	18.31	18.17	18.40	18.49	18.51	18.60
Fabricated metal products	12.79	13.07	12.89	13.02	13.00	12.89	13.06	13.18	13.19	13.23	13.36	13.31	13.31	13.36	13.40
Industrial machinery and equipment	14.07	14.45	14.32	14.36	14.40	14.42	14.44	14.53	14.55	14.62	14.71	14.68	14.71	14.79	14.80
Electronic and other electrical equipment	12.70	13.11	13.09	13.05	13.08	13.15	13.12	13.26	13.14	13.19	13.28	13.27	13.26	13.30	13.38
Transportation equipment	17.56	17.56	17.71	17.65	17.45	16.88	17.32	17.53	17.49	17.55	17.60	17.50	17.54	17.63	17.82
Motor vehicles and equipment	18.06	17.94	18.35	18.16	17.84	16.87	17.60	17.85	17.70	17.75	17.81	17.73	17.78	18.03	18.24
Instruments and related products	13.51	13.77	13.75	13.75	13.71	13.74	13.76	13.84	13.83	13.87	13.96	13.88	13.90	13.95	13.94
Miscellaneous manufacturing	10.59	10.87	10.76	10.79	10.82	10.84	10.83	10.96	11.00	11.01	11.10	11.14	11.16	11.18	11.19
Nondurable goods	12.33	12.75	12.71	12.71	12.69	12.79	12.73	12.91	12.82	12.89	12.97	12.98	12.96	13.02	13.10
Food and kindred products	11.49	11.80	11.75	11.78	11.76	11.80	11.75	11.95	11.82	11.96	12.02	11.94	11.91	11.94	12.06
Tobacco products	19.27	18.67	18.94	20.35	20.89	20.66	19.06	18.03	17.08	17.45	17.19	17.25	17.94	19.27	20.36
Textile mill products	10.03	10.39	10.39	10.37	10.36	10.36	10.38	10.48	10.44	10.51	10.56	10.63	10.60	10.61	10.65
Apparel and other textile products	8.25	8.52	8.47	8.46	8.50	8.48	8.54	8.62	8.65	8.63	8.70	8.67	8.65	8.78	8.85
Paper and allied products	15.04	15.50	15.44	15.50	15.45	15.63	15.53	15.83	15.58	15.63	15.77	15.71	15.68	15.77	15.83
Printing and publishing	13.05	13.44	13.32	13.32	13.33	13.43	13.46	13.64	13.60	13.55	13.67	13.65	13.65	13.71	13.72
Chemicals and allied products	16.58	17.13	17.15	17.11	17.05	17.19	17.14	17.31	17.22	17.28	17.31	17.25	17.21	17.20	17.37
Petroleum and coal products	20.18	20.90	20.99	20.80	20.71	20.81	20.78	20.80	21.05	20.95	21.21	21.20	21.42	21.79	21.92
Rubber and miscellaneous plastics products	11.57	11.87	11.84	11.85	11.81	11.91	11.84	11.98	11.89	11.97	12.08	12.19	12.16	12.20	12.24
Leather and leather products	8.98	9.34	9.28	9.33	9.35	9.16	9.29	9.37	9.46	9.45	9.44	9.65	9.57	9.54	9.57
TRANSPORTATION AND PUBLIC UTILITIES	14.93	15.34	15.27	15.21	15.22	15.31	15.33	15.46	15.43	15.53	15.54	15.61	15.59	15.54	15.63
WHOLESALE TRADE	13.44	14.01	13.90	13.96	13.89	13.99	14.13	14.10	14.13	14.28	14.27	14.36	14.33	14.23	14.18
RETAIL TRADE	8.34	8.75	8.70	8.71	8.70	8.71	8.74	8.90	8.86	8.87	8.90	9.02	9.00	8.98	8.96
FINANCE, INSURANCE, AND REAL ESTATE	13.33	14.06	13.98	13.99	13.93	13.94	14.11	14.10	14.20	14.42	14.40	14.47	14.55	14.53	14.62
SERVICES	12.28	12.84	12.77	12.75	12.70	12.67	12.75	12.97	13.01	13.15	13.18	13.30	13.32	13.33	13.34

[P] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

16. Average weekly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry

Industry	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.[p]	Apr.[p]
PRIVATE SECTOR															
Current dollars	$424.89	$441.84	$434.00	$439.42	$439.30	$440.57	$447.17	$442.13	$447.03	$450.75	$450.75	$445.06	$448.99	$447.68	$450.02
Seasonally adjusted	–	–	438.15	441.73	441.50	442.53	444.61	442.73	446.34	446.43	449.11	449.54	451.53	449.95	452.30
Constant (1982) dollars	261.31	268.11	264.31	266.96	266.57	267.17	270.85	267.47	269.78	271.86	271.86	267.79	269.99	268.72	–
MINING	734.12	744.11	730.86	742.81	736.12	739.64	745.36	736.16	752.01	761.23	758.20	732.67	731.45	722.91	739.94
CONSTRUCTION	623.57	642.53	620.92	643.66	642.80	666.86	671.27	628.50	674.40	646.42	656.76	632.02	630.28	630.18	649.64
MANUFACTURING															
Current dollars	553.14	562.53	549.17	563.05	561.37	549.51	560.45	564.40	567.33	572.56	583.19	564.16	564.16	568.01	574.08
Constant (1982) dollars	340.18	341.34	334.45	342.07	340.89	333.24	339.46	341.44	342.38	345.33	351.74	339.45	339.24	340.94	–
Durable goods	587.64	591.78	576.55	594.15	591.06	571.46	587.85	588.54	596.28	601.22	612.14	591.63	592.05	596.40	603.20
Lumber and wood products	441.57	456.62	448.39	457.88	461.76	460.62	465.50	453.20	466.05	466.88	472.88	459.91	454.18	462.99	469.99
Furniture and fixtures	424.11	441.05	430.75	432.68	441.05	439.27	448.95	435.91	448.39	447.98	460.65	445.11	439.79	443.60	448.54
Stone, clay, and glass products	569.38	590.24	584.73	596.16	594.80	594.32	601.08	606.70	601.92	596.94	599.13	579.61	576.03	578.14	594.86
Primary metal industries	683.38	684.22	679.64	691.53	689.53	670.64	676.27	683.72	667.52	678.47	684.61	674.08	672.98	678.90	683.96
Blast furnaces and basic steel products	809.55	821.98	835.97	842.17	833.85	811.71	815.93	830.63	786.67	800.15	794.03	809.60	808.01	814.44	822.12
Fabricated metal products	544.85	552.86	527.20	553.35	553.80	536.22	551.13	548.29	561.89	566.24	579.82	556.36	556.36	558.45	564.14
Industrial machinery and equipment	613.45	618.46	600.01	618.92	622.08	609.97	615.14	607.35	616.92	624.27	635.47	619.50	619.29	622.66	624.56
Electronic and other electrical equipment	533.40	542.75	528.84	537.66	541.51	533.89	544.48	543.66	545.31	555.30	561.74	544.07	544.99	542.64	549.92
Transportation equipment	781.42	762.10	733.19	771.31	748.61	692.08	739.56	759.05	773.06	782.73	804.32	757.75	770.01	775.72	791.21
Motor vehicles and equipment	812.70	780.39	756.02	800.86	761.77	668.05	748.00	781.83	787.65	802.30	833.51	780.12	800.10	813.15	837.22
Instruments and related products	567.42	568.70	558.25	566.50	566.22	557.84	565.54	561.90	568.41	575.61	586.32	571.86	576.85	577.53	577.12
Miscellaneous manufacturing	427.84	433.71	423.94	430.52	431.72	424.93	432.12	430.73	441.10	440.40	446.22	434.46	440.82	446.08	445.36
Nondurable goods	504.30	521.48	508.40	518.57	519.02	519.27	521.93	529.31	526.90	532.36	539.55	526.99	524.88	528.61	533.17
Food and kindred products	474.54	492.06	474.70	488.87	488.04	490.88	492.33	507.88	496.44	507.10	514.46	496.70	490.69	490.73	495.67
Tobacco products	749.60	713.19	700.78	793.65	833.51	811.94	749.06	674.32	667.83	677.06	642.91	643.43	665.57	734.19	761.46
Textile mill products	415.24	425.99	416.64	426.21	429.94	418.54	427.24	424.44	429.08	433.01	437.18	432.64	426.12	428.64	434.52
Apparel and other textile products	307.73	317.80	309.16	316.40	321.30	313.76	321.10	316.35	325.24	324.49	329.73	318.19	322.65	328.37	331.88
Paper and allied products	657.25	672.70	656.20	671.15	672.08	672.09	669.34	698.10	679.29	686.16	698.61	683.39	672.67	684.42	688.61
Printing and publishing	502.43	514.75	503.50	507.49	505.21	511.68	518.21	525.14	522.24	524.39	529.03	514.61	514.61	519.61	521.36
Chemicals and allied products	716.26	740.02	735.74	735.73	736.56	734.01	737.02	751.25	743.90	748.22	752.99	738.30	734.87	737.88	739.96
Petroleum and coal products	869.76	911.24	898.37	892.32	894.67	932.29	912.24	898.56	924.10	919.71	950.21	930.68	929.63	963.12	951.33
Rubber and miscellaneous plastics products	483.63	494.98	485.44	496.52	496.02	489.50	490.18	495.97	497.00	503.94	515.82	503.45	503.42	508.74	511.63
Leather and leather products	344.83	351.18	338.72	348.94	356.24	338.00	355.81	348.56	355.70	359.10	359.66	354.16	356.00	356.80	357.92
TRANSPORTATION AND PUBLIC UTILITIES	592.72	605.93	597.06	600.80	602.71	607.81	611.67	607.58	606.40	616.54	607.61	605.67	608.01	604.51	604.88
WHOLESALE TRADE	516.10	537.98	529.59	536.06	531.99	535.82	546.83	537.21	541.18	552.64	547.97	545.68	548.84	545.01	544.51
RETAIL TRADE	241.03	254.63	249.69	252.59	254.91	259.56	261.33	258.99	256.05	256.34	260.77	253.46	257.40	256.83	258.05
FINANCE, INSURANCE, AND REAL ESTATE	481.21	511.78	504.68	505.04	501.48	503.23	520.66	506.19	512.62	532.10	521.28	520.92	528.17	524.53	526.32
SERVICES	400.33	419.87	413.75	414.38	415.29	416.84	423.30	418.93	424.13	431.32	429.67	429.59	432.90	431.89	433.55

[p] = preliminary.
NOTE: See "Notes on the data" for a description of the most recent benchmark revision. Dash indicates data not available.

17. Diffusion indexes of employment change, seasonally adjusted

[In percent]

Timespan and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
	Private nonfarm payrolls, 356 industries											
Over 1-month span:												
1996	50.8	64.6	59.6	56.6	62.8	61.0	57.3	61.5	56.0	62.5	62.2	60.7
1997	58.0	61.4	59.8	63.6	60.1	54.6	61.1	59.1	60.0	64.3	62.4	64.9
1998	63.8	58.7	59.6	56.9	56.6	59.0	55.1	53.9	53.5	52.4	54.8	56.6
1999	54.5	54.1	46.5	55.2	–	–	–	–	–	–	–	–
Over 3-month span:												
1996	61.9	62.8	64.0	63.8	63.5	64.9	64.2	61.5	63.9	64.2	67.0	66.6
1997	64.9	63.3	65.6	66.2	63.9	61.2	60.1	65.9	67.4	68.1	70.8	71.9
1998	68.4	67.3	64.2	61.7	60.4	58.4	57.2	56.7	56.0	53.7	57.6	58.1
1999	59.0	52.5	53.2	–	–	–	–	–	–	–	–	–
Over 6-month span:												
1996	62.8	65.4	64.7	65.7	66.2	65.0	66.4	66.0	66.2	67.6	66.9	66.3
1997	67.6	67.0	65.3	64.9	65.6	67.3	68.0	67.3	70.6	72.3	73.3	72.6
1998	72.1	70.9	69.4	63.5	64.5	61.8	59.0	58.1	58.1	60.8	58.3	56.7
1999	57.2	–	–	–	–	–	–	–	–	–	–	–
Over 12-month span:												
1996	64.5	66.7	64.5	65.6	68.5	67.3	67.7	66.4	68.0	69.9	69.1	68.3
1997	69.8	67.6	69.2	70.1	69.8	69.8	71.2	71.2	71.1	73.0	72.9	72.3
1998	71.2	69.5	69.5	66.6	65.2	64.0	62.8	64.2	61.9	59.6	–	–
	Manufacturing payrolls, 139 industries											
Over 1-month span:												
1996	42.8	54.7	48.2	42.1	55.4	50.7	47.1	55.4	47.8	52.9	54.3	55.4
1997	49.3	54.3	50.0	56.8	51.4	52.2	50.4	48.9	56.5	57.2	56.1	60.8
1998	55.8	51.8	52.5	48.6	45.0	47.8	39.6	47.5	43.2	38.8	37.1	45.7
1999	43.9	41.4	36.7	43.9	–	–	–	–	–	–	–	–
Over 3-month span:												
1996	43.9	46.8	46.0	47.5	46.4	49.3	51.4	50.0	53.6	51.1	57.6	54.7
1997	54.3	49.3	54.3	54.0	55.4	50.4	47.5	52.2	57.9	62.6	64.7	65.5
1998	60.1	59.0	50.7	46.4	43.2	38.8	36.7	34.2	41.4	30.9	35.6	38.1
1999	39.9	32.0	33.5	–	–	–	–	–	–	–	–	–
Over 6-month span:												
1996	42.1	45.3	46.4	47.1	48.2	48.6	51.1	50.4	52.9	52.9	53.2	52.2
1997	54.3	54.3	51.4	52.9	51.4	55.0	56.8	57.6	60.4	64.4	67.6	65.8
1998	61.5	56.8	52.2	39.2	40.6	34.5	30.9	28.1	31.7	38.5	33.1	30.2
1999	29.5	–	–	–	–	–	–	–	–	–	–	–
Over 12-month span:												
1996	43.5	47.5	45.3	45.3	50.4	49.6	50.4	48.6	51.1	55.0	54.0	51.8
1997	57.2	52.5	54.7	56.5	57.9	57.6	58.6	58.6	60.4	60.4	59.4	58.3
1998	50.7	51.1	50.4	41.7	38.5	36.7	32.7	32.0	28.8	27.3	–	–

– Data not available.

NOTE: Figures are the percent of industries with employment increasing plus one-half of the industries with unchanged employment, where 50 percent indicates an equal balance between industries with increasing and decreasing employment. Data for the 2 most recent months shown in each span are preliminary. See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

18. Annual data: Employment status of the population

[Numbers in thousands]

Employment status	1990	1991	1992	1993	1994	1995	1996	1997	1998
Civilian noninstitutional population	189,164	190,925	192,805	194,838	196,814	198,584	200,591	203,133	205,220
Civilian labor force	125,840	126,346	128,105	129,200	131,056	132,304	133,943	136,297	137,673
Labor force participation rate	66.5	66.2	66.4	66.3	66.6	66.6	66.8	67.1	67.1
Employed	118,793	117,718	118,492	120,259	123,060	124,900	126,708	129,558	131,463
Employment-population ratio	62.8	61.7	61.5	61.7	62.5	62.9	63.2	63.8	64.1
Agriculture	3,223	3,269	3,247	3,115	3,409	3,440	3,443	3,399	3,378
Nonagricultural industries	115,570	114,499	115,245	117,144	119,651	121,460	123,264	126,159	128,085
Unemployed	7,047	8,628	9,613	8,940	7,996	7,404	7,236	6,739	6,210
Unemployment rate	5.6	6.8	7.5	6.9	6.1	5.6	5.4	4.9	4.5
Not in the labor force	63,324	64,578	64,700	65,638	65,758	66,280	66,647	66,837	67,547

19. Annual data: Employment levels by industry

[In thousands]

Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total employment	109,403	108,249	108,601	110,713	114,163	117,191	119,608	122,690	125,832
Private sector	91,098	89,847	89,956	91,872	95,036	97,885	100,189	103,120	105,970
Goods-producing	24,905	23,745	23,231	23,352	23,908	24,265	24,493	24,934	25,256
Mining	709	689	635	610	601	581	580	592	575
Construction	5,120	4,650	4,492	4,668	4,986	5,160	5,418	5,686	5,965
Manufacturing	19,076	18,406	18,104	18,075	18,321	18,524	18,495	18,657	18,716
Service-producing	84,497	84,504	85,370	87,361	90,256	92,925	95,115	97,756	100,576
Transportation and public utilities	5,777	5,755	5,718	5,811	5,984	6,132	6,253	6,395	6,549
Wholesale trade	6,173	6,081	5,997	5,981	6,162	6,378	6,482	6,648	6,825
Retail trade	19,601	19,284	19,356	19,773	20,507	21,187	21,597	22,011	22,475
Finance, insurance, and real estate	6,709	6,646	6,602	6,757	6,896	6,806	6,911	7,091	7,341
Services	27,934	28,336	29,052	30,197	31,579	33,117	34,454	36,040	37,525
Government	18,304	18,402	18,645	18,841	19,128	19,305	19,419	19,570	19,862
Federal	3,085	2,966	2,969	2,915	2,870	2,822	2,757	2,699	2,686
State	4,305	4,355	4,408	4,488	4,576	4,635	4,606	4,594	4,648
Local	10,914	11,081	11,267	11,438	11,682	11,849	12,056	12,276	12,527

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

20. Annual data: Average hours and earnings of production or nonsupervisory workers on nonfarm payrolls, by industry

Industry	1990	1991	1992	1993	1994	1995	1996	1997	1998
Private sector:									
Average weekly hours	34.5	34.3	34.4	34.5	34.7	34.5	34.4	34.6	34.6
Average hourly earnings (in dollars)	10.01	10.32	10.57	10.83	11.12	11.43	11.82	12.28	12.77
Average weekly earnings (in dollars)	345.35	353.98	363.61	373.64	385.86	394.34	406.61	424.89	441.84
Mining:									
Average weekly hours	44.1	44.4	43.9	44.3	44.8	44.7	45.3	45.4	43.9
Average hourly earnings (in dollars)	13.68	14.19	14.54	14.60	14.88	15.30	15.62	16.17	16.95
Average weekly earnings (in dollars)	603.29	630.04	638.31	646.78	666.62	683.91	707.59	734.12	744.11
Construction:									
Average weekly hours	38.2	38.1	38.0	38.5	38.9	38.9	39.0	38.9	38.8
Average hourly earnings (in dollars)	13.77	14.00	14.15	14.38	14.73	15.09	15.47	16.03	16.56
Average weekly earnings (in dollars)	526.01	533.40	537.70	553.63	573.00	587.00	603.33	623.57	642.53
Manufacturing:									
Average weekly hours	40.8	40.7	41.0	41.4	42.0	41.6	41.6	42.0	41.7
Average hourly earnings (in dollars)	10.83	11.18	11.46	11.74	12.07	12.37	12.77	13.17	13.49
Average weekly earnings (in dollars)	441.86	455.03	469.86	486.04	506.94	514.59	531.23	553.14	562.53
Transportation and public utilities:									
Average weekly hours	38.4	38.1	38.3	39.3	39.7	39.4	39.6	39.7	39.5
Average hourly earnings (in dollars)	12.92	13.20	13.43	13.55	13.78	14.13	14.45	14.93	15.34
Average weekly earnings (in dollars)	496.13	502.92	514.37	532.52	547.07	556.72	572.22	592.72	605.93
Wholesale trade:									
Average weekly hours	38.1	38.1	38.2	38.2	38.4	38.3	38.3	38.4	38.4
Average hourly earnings (in dollars)	10.79	11.15	11.39	11.74	12.06	12.43	12.87	13.44	14.01
Average weekly earnings (in dollars)	411.10	424.82	435.10	448.47	463.10	476.07	492.92	516.10	537.98
Retail trade:									
Average weekly hours	28.8	28.6	28.8	28.8	28.9	28.8	28.8	28.9	29.1
Average hourly earnings (in dollars)	6.75	6.94	7.12	7.29	7.49	7.69	7.99	8.34	8.75
Average weekly earnings (in dollars)	194.40	198.48	205.06	209.95	216.46	221.47	230.11	241.03	254.63
Finance, insurance, and real estate:									
Average weekly hours	35.8	35.7	35.8	35.8	35.8	35.9	35.9	36.1	36.4
Average hourly earnings (in dollars)	9.97	10.39	10.82	11.35	11.83	12.32	12.80	13.33	14.06
Average weekly earnings (in dollars)	356.93	370.92	387.36	406.33	423.51	442.29	459.52	481.21	511.78
Services:									
Average weekly hours	32.5	32.4	32.5	32.5	32.5	32.4	32.4	32.6	32.7
Average hourly earnings (in dollars)	9.83	10.23	10.54	10.78	11.04	11.39	11.79	12.28	12.84
Average weekly earnings (in dollars)	319.48	331.45	342.55	350.35	358.80	369.04	382.00	400.33	419.87

21. Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	1997				1998				1999	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended Mar. 1999	12 months ended Mar. 1999
Civilian workers[2]	132.0	132.8	134.1	135.2	136.3	137.4	139.0	139.8	140.4	0.4	3.0
Workers, by occupational group:											
White-collar workers	133.1	133.9	135.2	136.5	137.7	138.7	140.6	141.4	141.9	.4	3.1
Professional specialty and technical	133.7	134.6	135.8	136.7	137.5	138.3	140.0	141.0	141.3	.2	2.8
Executive, adminitrative, and managerial	133.2	134.0	135.3	137.3	139.1	139.7	141.7	141.8	143.5	1.2	3.2
Administrative support, including clerical	133.6	134.6	135.8	136.9	138.0	139.3	140.4	141.3	142.5	.8	3.3
Blue-collar workers	129.8	130.9	131.8	132.4	133.2	134.3	135.3	136.1	137.1	.7	2.9
Service occupations	132.0	132.7	134.6	135.6	136.9	137.9	139.4	140.0	141.3	.9	3.2
Workers, by industry division:											
Goods-producing	131.5	132.7	133.6	134.1	135.1	136.3	137.2	137.9	139.0	.8	2.9
Manufacturing	132.6	133.8	134.6	135.3	136.4	137.2	138.2	138.9	139.9	.7	2.6
Service-producing	132.1	132.9	134.2	135.5	136.8	137.7	139.6	140.4	140.9	.4	3.0
Services	134.1	134.9	136.5	137.6	138.3	139.0	140.8	141.7	142.3	.4	2.9
Health services	135.2	135.7	136.7	137.9	138.0	138.5	139.1	139.1	140.5	1.0	1.8
Hospitals	134.2	134.6	135.6	136.7	137.1	138.2	139.4	140.2	141.3	.8	3.1
Educational services	134.0	134.2	136.5	137.0	137.5	137.7	140.2	141.0	141.3	.2	2.8
Public administration[3]	133.0	133.0	134.1	135.1	136.4	137.4	138.9	139.9	140.8	.6	3.2
Nonmanufacturing	131.7	132.5	133.8	135.1	136.2	137.3	139.0	139.9	140.5	.4	3.2
Private industry workers	131.7	132.8	133.9	135.1	136.3	137.5	139.0	139.8	140.4	.4	3.0
Excluding sales occupations	131.9	133.0	134.1	135.2	136.4	137.5	138.8	139.4	140.5	.8	3.0
Workers, by occupational group:											
White-collar workers	133.1	134.1	135.2	136.7	138.1	139.4	141.1	142.0	142.4	.3	3.1
Excluding sales occupations	133.7	134.8	135.9	137.4	138.8	139.9	141.3	141.9	143.0	.8	3.0
Professional specialty and technical occupations	134.6	135.9	136.7	137.8	138.8	140.1	141.6	142.6	142.9	.2	3.0
Executive, adminitrative, and managerial occupations	133.0	133.9	135.2	137.4	139.4	140.0	141.9	141.8	143.7	1.3	3.1
Sales occupations	130.1	130.7	132.2	133.5	135.3	137.3	140.4	142.6	139.6	−2.1	3.2
Administrative support occupations, including clerical	133.7	134.7	135.9	137.0	138.2	139.6	140.6	141.4	142.6	.8	3.2
Blue-collar workers	129.6	130.8	131.7	132.3	133.1	134.3	135.2	135.9	136.9	.7	2.9
Precision production, craft, and repair occupations	129.6	130.9	131.7	131.9	132.9	134.4	135.4	136.1	137.2	.8	3.2
Machine operators, assemblers, and inspectors	130.0	131.2	132.2	133.0	133.6	134.7	135.7	136.8	137.3	.4	2.8
Transportation and material moving occupations	126.1	126.8	128.0	128.9	129.3	129.9	130.7	130.7	131.6	.7	1.8
Handlers, equipment cleaners, helpers, and laborers	132.8	133.4	134.2	135.8	137.0	137.6	138.5	139.2	141.0	1.3	2.9
Service occupations	129.8	130.9	133.1	134.1	135.3	136.0	137.3	138.0	139.5	1.1	3.1
Production and nonsupervisory occupations[4]	131.1	132.1	133.2	134.2	135.3	136.6	138.0	139.0	139.3	.2	3.0
Workers, by industry division:											
Goods-producing	131.4	132.7	133.6	134.1	135.1	136.2	137.1	137.8	138.9	.8	2.8
Excluding sales occupations	131.1	132.3	133.1	133.6	134.5	135.6	136.5	137.2	138.3	.8	2.8
White-collar occupations	133.5	134.8	135.6	136.2	137.7	138.8	139.7	140.2	141.7	1.1	2.9
Excluding sales occupations	132.6	133.8	134.5	135.0	136.3	137.4	138.3	138.8	140.4	1.2	3.0
Blue-collar occupations	130.2	131.4	132.4	132.8	133.5	134.6	135.5	136.3	137.1	.6	2.7
Construction	127.2	128.7	129.7	129.7	130.6	132.7	133.4	134.3	135.6	1.0	3.8
Manufacturing	132.6	133.8	134.6	135.3	136.4	137.2	138.2	138.9	139.9	.7	2.6
White-collar occupations	133.9	135.2	135.8	136.7	138.2	139.1	140.1	140.5	141.8	.9	2.6
Excluding sales occupations	132.8	133.8	134.5	135.3	136.5	137.3	138.3	138.7	140.1	1.0	2.6
Blue-collar occupations	131.7	132.8	133.7	134.3	135.0	135.9	136.8	137.7	138.5	.6	2.6
Durables	133.0	134.1	135.0	135.7	136.5	137.4	138.5	139.2	139.9	.5	2.5
Nondurables	131.7	133.0	133.7	134.5	135.9	136.7	137.6	138.2	139.6	1.0	2.7
Service-producing	131.6	132.5	133.8	135.3	136.7	137.8	139.6	140.5	140.9	.3	3.1
Excluding sales occupations	132.2	133.3	134.5	136.1	137.4	138.5	140.0	140.6	141.7	.8	3.1
White-collar occupations	132.7	133.7	134.9	136.6	138.0	139.3	141.2	142.2	142.3	.1	3.1
Excluding sales occupations	134.0	135.1	136.3	138.1	139.5	140.6	142.2	142.8	143.8	.7	3.1
Blue-collar occupations	128.2	129.2	130.0	130.9	132.1	133.2	134.3	134.8	136.2	1.0	3.1
Service occupations	129.5	130.6	132.7	133.9	135.0	135.8	137.0	137.8	139.3	1.1	3.2
Transportation and public utilities	131.3	131.7	132.9	134.2	135.8	137.1	138.5	139.3	139.7	.3	2.9
Transportation	130.6	130.9	132.1	133.4	134.0	134.9	136.7	137.3	136.8	−.4	2.1
Public utilities	132.0	132.5	133.7	135.1	137.9	139.7	140.7	141.9	143.4	1.1	4.0
Communications	130.2	130.5	131.8	134.0	136.6	139.2	140.5	141.7	143.3	1.1	4.9
Electric, gas, and sanitary services	134.2	134.9	136.0	136.4	139.6	140.3	141.0	142.1	143.4	.9	2.7
Wholesale and retail trade	130.1	131.2	132.4	132.9	134.7	135.8	137.6	138.2	138.9	.5	3.1
Excluding sales occupations	130.4	131.9	133.0	134.0	135.5	136.3	138.1	138.8	139.9	.8	3.2
Wholesale trade	132.9	133.8	134.6	135.1	137.7	138.6	140.8	142.8	142.7	−.1	3.6
Excluding sales occupations	132.6	133.7	134.5	135.4	137.0	138.2	140.0	141.2	142.4	.8	3.9
Retail trade	128.5	129.7	131.1	131.7	133.1	134.4	135.9	135.6	136.8	.9	2.8
General merchandise stores	126.4	127.7	128.6	130.0	131.2	133.0	133.2	134.0	135.0	.7	2.9
Food stores	128.2	128.2	129.8	129.4	131.3	132.9	133.7	132.7	134.3	1.2	2.3

See footnotes at end of table.

21. Continued—Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	1997				1998				1999	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended Mar. 1999	12 months ended Mar. 1999
Finance, insurance, and real estate	128.6	129.4	130.5	134.5	136.7	138.4	141.0	142.5	141.5	–.7	3.5
Excluding sales occupations	131.5	132.4	133.5	137.6	140.2	141.3	143.2	143.3	145.6	1.6	3.9
Banking, savings and loan, and other credit agencies	130.6	131.6	133.1	140.6	143.3	145.3	148.4	146.7	148.8	1.4	3.8
Insurance	131.9	132.1	133.1	134.8	137.4	138.9	141.9	141.7	141.7	.0	3.1
Services	134.6	135.7	137.0	138.5	139.3	140.3	141.8	142.7	143.5	.6	3.0
Business services	133.3	134.2	136.3	138.6	139.5	140.7	143.5	145.9	147.5	1.1	5.7
Health services	135.5	135.9	137.0	138.1	138.2	138.7	139.0	139.0	140.5	1.1	1.7
Hospitals	134.0	134.4	135.4	136.5	136.7	138.2	139.1	139.9	141.2	.9	3.3
Educational services	138.5	138.8	141.6	142.6	143.4	143.9	147.0	147.7	148.3	.4	3.4
Colleges and universities	139.5	139.9	142.5	143.7	144.3	144.8	147.8	148.5	149.2	.5	3.4
Nonmanufacturing	131.1	132.1	133.3	134.7	136.0	137.2	138.9	139.7	140.3	.4	3.2
White-collar workers	132.7	133.6	134.9	136.5	137.9	139.2	141.1	142.0	142.3	.2	3.2
Excluding sales occupations	134.0	135.1	136.2	137.9	139.3	140.5	142.0	142.7	143.7	.7	3.2
Blue-collar occupations	127.5	128.6	129.4	130.1	131.0	132.4	133.4	134.0	135.2	.9	3.2
Service occupations	129.4	130.5	132.7	133.8	134.9	135.7	136.9	137.7	139.2	1.1	3.2
State and local government workers	133.2	133.3	135.0	135.7	136.5	136.9	139.0	139.8	140.5	.5	2.9
Workers, by occupational group:											
White-collar workers	132.9	133.0	134.8	135.5	136.1	136.2	138.4	139.3	139.8	.4	2.7
Professional specialty and technical	132.5	132.5	134.6	135.1	135.6	135.6	137.7	138.5	138.8	.2	2.4
Executive, administrative, and managerial	134.1	134.4	135.6	136.4	137.5	137.9	140.4	141.6	142.6	.7	3.7
Administrative support, including clerical	133.3	133.5	135.3	136.1	136.9	137.2	139.5	140.3	141.4	.8	3.3
Blue-collar workers	132.1	132.3	133.3	134.2	135.0	135.2	136.8	137.8	138.8	.7	2.8
Workers, by industry division:											
Services	133.2	133.3	135.4	136.0	136.5	136.6	139.0	139.7	140.0	.2	2.6
Services excluding schools[5]	132.5	132.9	134.4	135.3	136.1	136.2	138.7	138.8	139.6	.6	2.6
Health services	134.5	134.9	136.0	137.2	137.9	138.0	140.3	140.7	141.2	.4	2.4
Hospitals	134.8	135.2	136.3	137.6	138.4	138.4	140.7	141.2	141.7	.4	2.4
Educational services	133.1	133.2	135.4	135.9	136.3	136.5	138.8	139.6	139.9	.2	2.6
Schools	133.4	133.5	135.7	136.2	136.6	136.7	139.1	139.9	140.2	.2	2.6
Elementary and secondary	133.1	133.3	135.5	135.8	136.1	136.2	138.8	139.3	139.6	.2	2.6
Colleges and universities	134.3	134.1	136.3	137.2	137.9	138.1	140.4	141.5	141.7	.1	2.8
Public administration[3]	133.0	133.0	134.1	135.1	136.4	137.4	138.9	139.9	140.8	.6	3.2

[1] Cost (cents per hour worked) measured in the Employment Cost Index consists of wages, salaries, and employer cost of employee benefits.

[2] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[3] Consists of legislative, judicial, administrative, and regulatory activities.

[4] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[5] Includes, for example, library, social, and health services.

22. Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	1997				1998				1999	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended Mar. 1999	12 months ended Mar. 1999
Civilian workers[1]	129.2	130.1	131.6	132.8	134.0	135.0	136.8	137.7	138.4	0.5	3.3
Workers, by occupational group:											
White-collar workers	130.6	131.5	133.0	134.3	135.6	136.7	138.8	139.7	140.1	.3	3.3
Professional specialty and technical	131.4	132.3	134.0	135.0	135.8	136.6	138.5	139.4	140.1	.5	3.2
Executive, administrative, and managerial	131.0	132.0	133.5	135.6	137.4	138.3	140.5	140.3	141.6	.9	3.1
Administrative support, including clerical	130.4	131.4	132.7	133.7	135.0	136.2	137.5	138.6	140.0	1.0	3.7
Blue-collar workers	126.2	127.5	128.4	129.3	130.4	131.4	132.6	133.3	134.5	.9	3.1
Service occupations	128.6	129.3	131.5	132.6	133.7	134.5	136.1	137.0	138.3	.9	3.4
Workers, by industry division:											
Goods-producing	127.6	128.9	129.9	130.6	132.0	133.3	134.4	135.2	136.3	.8	3.3
Manufacturing	129.1	130.3	131.3	132.2	133.7	134.6	136.0	136.8	137.9	.8	3.1
Service-producing	129.8	130.6	132.2	133.6	134.8	135.7	137.8	138.7	139.2	.4	3.3
Services	132.0	132.9	134.8	136.0	136.9	137.6	139.6	140.5	141.5	.7	3.4
Health services	132.4	133.1	134.3	135.4	136.2	136.5	137.6	137.6	138.8	.9	1.9
Hospitals	131.0	131.5	132.5	133.6	134.2	135.1	136.4	137.1	138.1	.7	2.9
Educational services	132.5	132.6	135.3	135.9	136.3	136.5	139.1	140.0	140.2	.1	2.9
Public administration[2]	128.9	129.0	130.3	131.4	132.7	133.2	134.8	135.9	136.9	.7	3.2
Nonmanufacturing	129.1	130.0	131.5	132.8	134.0	135.1	137.0	137.8	138.4	.4	3.3
Private industry workers	128.6	129.7	131.0	132.3	133.7	134.9	136.6	137.4	138.1	.5	3.3
Excluding sales occupations	128.6	129.9	131.2	132.4	133.7	134.8	136.3	136.9	138.2	.9	3.4
Workers, by occupational group:											
White-collar workers	130.2	131.3	132.7	134.2	135.7	137.0	139.0	139.9	140.3	.3	3.4
Excluding sales occupations	130.8	132.0	133.4	134.8	136.3	137.5	139.1	139.7	141.0	.9	3.4
Professional specialty and technical occupations	131.0	132.4	133.7	134.8	135.9	137.1	138.7	139.7	140.7	.7	3.5
Executive, administrative, and managerial occupations	131.0	132.1	133.6	135.8	137.8	138.7	140.9	140.5	141.9	1.0	3.0
Sales occupations	127.8	128.3	129.8	131.4	133.1	135.2	138.8	141.3	137.3	–2.8	3.2
Administrative support occupations, including clerical	130.6	131.7	132.9	133.9	135.3	136.7	137.9	138.9	140.4	1.1	3.8
Blue-collar workers	126.0	127.3	128.3	129.1	130.2	131.3	132.4	133.2	134.3	.8	3.1
Precision production, craft, and repair occupations	125.8	127.4	128.2	128.7	129.8	131.2	132.3	133.0	134.3	1.0	3.5
Machine operators, assemblers, and inspectors	127.2	128.5	129.5	130.6	131.6	132.7	133.8	134.9	135.7	.6	3.1
Transportation and material moving occupations	122.3	123.0	124.1	125.1	125.9	126.4	127.6	127.8	129.1	1.0	2.5
Handlers, equipment cleaners, helpers, and laborers	128.4	129.3	130.2	131.8	133.2	133.7	135.1	135.8	137.3	1.1	3.1
Service occupations	126.6	127.6	129.9	131.1	132.1	133.0	134.4	135.3	136.7	1.0	3.5
Production and nonsupervisory occupations[3]	127.7	128.8	130.1	131.2	132.3	133.6	135.2	136.4	136.8	.3	3.4
Workers, by industry division:											
Goods-producing	127.5	128.9	129.9	130.6	132.0	133.2	134.3	135.2	136.3	.8	3.3
Excluding sales occupations	127.0	128.3	129.3	130.0	131.3	132.5	133.6	134.4	135.5	.8	3.2
White-collar occupations	130.0	131.4	132.3	132.9	135.0	136.3	137.4	138.2	139.4	.9	3.3
Excluding sales occupations	128.9	130.0	130.9	131.6	133.3	134.6	135.7	136.4	137.8	1.0	3.4
Blue-collar occupations	126.0	127.3	128.4	129.2	130.1	131.3	132.3	133.3	134.3	.8	3.2
Construction	122.0	123.6	124.7	124.9	126.0	128.1	128.5	129.3	130.7	1.1	3.7
Manufacturing	129.1	130.3	131.3	132.2	133.7	134.6	136.0	136.8	137.9	.8	3.1
White-collar occupations	130.6	131.9	132.8	133.6	135.6	136.8	138.3	139.0	140.1	.8	3.3
Excluding sales occupations	129.3	130.5	131.3	132.2	133.8	135.0	136.3	137.1	138.3	.9	3.4
Blue-collar occupations	128.0	129.2	130.2	131.2	132.3	133.1	134.3	135.3	136.3	.7	3.0
Durables	129.0	130.1	131.2	131.9	133.4	134.5	135.9	136.9	137.9	.7	3.4
Nondurables	129.3	130.6	131.4	132.6	134.2	134.9	136.0	136.8	138.0	.9	2.8
Service-producing	129.0	130.1	131.5	133.1	134.4	135.6	137.6	138.4	138.9	.4	3.3
Excluding sales occupations	129.7	130.9	132.3	133.9	135.2	136.2	137.9	138.5	139.8	.9	3.4
White-collar occupations	130.1	131.2	132.6	134.3	135.7	137.0	139.2	140.1	140.3	.1	3.4
Excluding sales occupations	131.5	132.7	134.2	135.9	137.3	138.4	140.2	140.7	142.0	.9	3.4
Blue-collar occupations	126.0	127.2	127.9	128.9	130.2	131.1	132.4	132.9	134.4	1.1	3.2
Service occupations	126.5	127.5	129.8	131.0	132.1	133.0	134.2	135.2	136.7	1.1	3.5
Transportation and public utilities	128.2	128.8	130.1	131.3	132.1	132.8	134.3	135.1	135.4	.2	2.5
Transportation	126.5	126.9	128.5	129.5	130.1	130.4	132.4	132.9	132.3	–.5	1.7
Public utilities	130.1	130.9	132.0	133.5	134.5	135.7	136.5	137.8	139.2	1.0	3.5
Communications	129.8	130.6	131.8	134.0	134.4	135.8	136.7	138.0	139.4	1.0	3.7
Electric, gas, and sanitary services	130.4	131.2	132.2	132.9	134.7	135.6	136.3	137.4	138.9	1.1	3.1
Wholesale and retail trade	128.5	129.7	130.9	131.6	133.3	134.6	136.6	137.0	137.7	.5	3.3
Excluding sales occupations	129.3	131.1	132.2	133.2	134.7	135.6	137.6	138.2	139.5	.9	3.6
Wholesale trade	131.4	132.2	133.0	133.6	136.2	137.1	139.3	141.3	140.7	–.4	3.3
Excluding sales occupations	131.8	132.8	133.9	135.0	136.5	137.8	139.6	140.8	141.9	.8	4.0
Retail trade	127.1	128.5	129.9	130.6	131.9	133.3	135.2	134.8	136.2	1.0	3.3
Food stores	124.8	124.7	126.7	127.0	129.0	130.5	131.7	130.5	131.8	1.0	2.2
General merchandise stores	125.0	126.2	126.7	128.4	129.4	131.5	132.2	133.0	133.7	.5	3.3

See footnotes at end of table.

22. Continued—Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	1997				1998				1999	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 1999	
Finance, insurance, and real estate	124.5	125.3	126.4	130.6	132.6	134.8	138.1	139.8	137.2	−1.9	3.5
Excluding sales occupations	127.2	128.1	129.3	133.6	135.9	137.5	139.7	139.6	141.0	1.0	3.8
Banking, savings and loan, and other credit agencies	125.9	126.8	128.9	138.3	140.9	143.2	147.0	144.4	146.1	1.2	3.7
Insurance	127.9	128.0	128.7	130.2	133.1	134.8	138.7	138.5	137.4	−.8	3.2
Services	131.8	133.0	134.7	136.2	137.2	138.3	140.0	140.8	142.2	1.0	3.6
Business services	131.4	132.4	134.9	137.3	137.6	139.2	141.8	144.1	145.4	.9	5.7
Health services	132.5	133.2	134.3	135.4	136.2	136.5	137.5	137.4	138.7	.9	1.8
Hospitals	130.7	131.2	132.2	133.2	133.6	134.7	135.8	136.5	137.6	.8	3.0
Educational services	134.5	134.8	137.8	138.4	139.1	139.6	142.8	143.5	143.9	.3	3.5
Colleges and universities	134.6	135.0	137.8	138.7	139.1	139.7	142.8	143.6	144.1	.3	3.6
Nonmanufacturing	128.2	129.3	130.7	132.1	133.4	134.7	136.5	137.4	137.9	.4	3.4
White-collar workers	129.9	131.0	132.4	134.1	135.5	136.8	138.9	139.8	140.1	.2	3.4
Excluding sales occupations	131.2	132.4	133.8	135.5	136.9	138.1	139.8	140.3	141.6	.9	3.4
Blue-collar occupations	124.1	125.5	126.4	127.1	128.2	129.5	130.5	131.1	132.4	1.0	3.3
Service occupations	126.4	127.4	129.7	130.9	132.0	132.9	134.1	135.1	136.5	1.0	3.4
State and local government workers	131.4	131.5	133.6	134.4	135.1	135.4	137.6	138.5	139.0	.4	2.9
Workers, by occupational group:											
White-collar workers	131.4	131.5	133.7	134.5	135.0	135.2	137.6	138.5	138.9	.3	2.9
Professional specialty and technical	131.9	132.0	134.4	135.1	135.5	135.6	137.9	138.7	138.9	.1	2.5
Executive, administrative, and managerial	131.3	131.7	133.1	134.1	135.1	135.6	138.0	139.3	140.1	.6	3.7
Administrative support, including clerical	129.2	129.5	131.4	132.3	133.0	133.3	135.4	136.5	137.4	.7	3.3
Blue-collar workers	129.6	129.8	131.2	132.3	133.1	133.5	135.1	136.0	136.9	.7	2.9
Workers, by industry division:											
Services	132.1	132.2	134.7	135.3	135.7	135.9	138.4	139.2	139.5	.2	2.8
Services excluding schools[4]	131.2	131.6	133.3	134.4	135.4	135.5	137.8	138.2	139.0	.6	2.7
Health services	132.1	132.6	133.9	135.3	136.3	136.5	138.7	139.2	139.7	.4	2.5
Hospitals	131.9	132.4	133.7	135.2	136.3	136.5	138.6	139.1	139.7	.4	2.5
Educational services	132.1	132.2	134.8	135.3	135.7	135.8	138.4	139.3	139.5	.1	2.8
Schools	132.2	132.3	134.9	135.5	135.8	136.0	138.5	139.5	139.6	.1	2.8
Elementary and secondary	132.4	132.6	135.3	135.7	136.0	136.1	138.7	139.3	139.5	.1	2.6
Colleges and universities	131.5	131.4	133.6	134.6	135.2	135.5	137.7	139.6	139.6	.0	3.3
Public administration[2]	128.9	129.0	130.3	131.4	132.7	133.2	134.8	135.9	136.9	.7	3.2

[1] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[2] Consists of legislative, judicial, administrative, and regulatory activities.

[3] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[4] Includes, for example, library, social, and health services.

23. Employment Cost Index, benefits, private industry workers by occupation and industry group

[June 1989 = 100]

Series	1997				1998				1999	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended	12 months ended
										Mar. 1999	
Private industry workers	139.4	140.1	140.8	141.8	142.6	143.7	144.5	145.2	145.8	0.4	2.2
Workers, by occupational group:											
White-collar workers	140.8	141.5	142.0	143.4	144.7	145.6	146.6	147.4	147.9	.3	2.2
Blue-collar workers	137.2	138.0	138.8	139.0	139.1	140.4	141.0	141.6	142.2	.4	2.2
Workers, by industry division:											
Goods-producing	139.9	140.9	141.5	141.5	141.5	142.5	143.0	143.2	144.3	.8	2.0
Service-producing	138.5	139.2	139.8	141.4	142.7	143.8	144.9	145.7	146.1	.3	2.4
Manufacturing	139.9	141.0	141.4	141.7	141.7	142.4	142.6	142.7	143.6	.6	1.3
Nonmanufacturing	138.9	139.5	140.2	141.5	142.7	143.9	145.0	145.8	146.3	.3	2.5

24. Employment Cost Index, private nonfarm workers by bargaining status, region, and area size

[June 1989 = 100]

Series	1997				1998				1999	Percent change	
	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	3 months ended Mar. 1999	12 months ended Mar. 1999
COMPENSATION											
Workers, by bargaining status[1]											
Union	131.0	131.8	133.2	133.5	134.0	135.3	136.8	137.5	130.8	0.4	3.0
Goods-producing	130.0	131.2	132.3	132.5	132.7	134.3	135.6	136.5	136.8	.2	3.1
Service-producing	131.9	132.4	134.0	134.5	135.3	136.2	138.0	138.5	139.2	.5	2.9
Manufacturing	130.8	131.7	133.0	133.3	133.6	134.6	136.0	136.9	137.0	.1	2.5
Nonmanufacturing	130.6	131.5	132.9	133.2	133.9	135.3	136.9	137.4	138.1	.5	3.1
Nonunion	131.8	132.8	133.9	135.3	136.7	137.8	139.3	140.1	140.8	.5	3.0
Goods-producing	132.0	133.2	134.0	134.7	135.9	136.9	137.7	138.3	139.7	1.0	2.8
Service-producing	131.5	132.5	133.7	135.3	136.7	138.0	139.7	140.6	141.1	.4	3.2
Manufacturing	133.1	134.4	135.1	135.9	137.2	138.0	138.9	139.4	140.7	.9	2.6
Nonmanufacturing	131.1	132.2	133.4	134.9	136.3	137.5	139.1	140.0	140.6	.4	3.2
Workers, by region[1]											
Northeast	132.2	133.1	134.0	135.0	136.0	137.0	138.7	139.5	140.5	.7	3.3
South	130.8	131.5	132.5	134.6	135.5	136.4	137.6	138.1	139.1	.7	2.7
Midwest (formerly North Central)	133.3	134.7	136.2	136.9	138.3	139.6	140.9	141.4	141.7	.2	2.5
West	130.3	131.4	132.5	133.4	135.2	136.6	138.5	140.0	140.3	.2	3.8
Workers, by area size[1]											
Metropolitan areas	131.7	132.8	133.9	135.1	136.4	137.5	139.1	139.8	140.4	.4	2.9
Other areas	131.4	132.4	133.8	135.3	135.9	137.1	138.2	139.4	140.5	.8	3.4
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	126.0	126.9	128.3	128.9	129.6	130.7	132.4	133.1	133.6	.4	3.1
Goods-producing	124.1	125.4	126.6	127.1	127.9	129.4	131.0	131.7	132.3	.5	3.4
Service-producing	128.2	128.8	130.4	131.2	131.8	132.2	134.1	134.8	135.4	.4	2.7
Manufacturing	125.6	126.5	127.8	128.6	129.6	130.4	132.2	133.0	133.6	.5	3.1
Nonmanufacturing	126.1	127.1	128.6	129.1	129.6	130.8	132.4	133.1	133.7	.5	3.2
Nonunion	129.1	130.3	131.6	133.0	134.5	135.7	137.4	138.3	139.0	.5	3.3
Goods-producing	128.9	130.2	131.2	132.0	133.6	134.7	135.7	136.5	137.8	1.0	3.1
Service-producing	129.1	130.2	131.6	133.2	134.6	135.9	137.9	138.8	139.3	.4	3.5
Manufacturing	130.3	131.7	132.6	133.5	135.1	136.2	137.3	138.2	139.4	.9	3.2
Nonmanufacturing	128.5	129.7	131.1	132.6	134.0	135.3	137.1	138.0	138.6	.4	3.4
Workers, by region[1]											
Northeast	128.8	129.8	130.7	131.6	132.6	133.8	135.4	136.4	137.1	.5	3.4
South	128.5	129.4	130.6	133.0	134.0	134.9	136.5	136.7	137.9	.9	2.9
Midwest (formerly North Central)	129.0	130.4	132.2	133.0	134.7	136.0	137.5	138.0	138.9	.7	3.1
West	127.7	128.9	130.2	131.2	132.9	134.5	136.7	138.4	138.2	–.1	4.0
Workers, by area size[1]											
Metropolitan areas	128.7	129.9	131.1	132.3	133.8	135.1	136.9	137.7	138.3	.4	3.4
Other areas	127.7	128.8	130.4	132.0	132.5	133.4	134.7	136.0	137.1	.8	3.5

[1] The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see the *Monthly Labor Review* Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

25. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, medium and large private establishments, selected years, 1980–97

Item	1980	1982	1984	1986	1988	1989	1991	1993	1995	1997
Scope of survey (in 000's)	21,352	21,043	21,013	21,303	31,059	32,428	31,163	28,728	33,374	38,409
Number of employees (in 000's):										
With medical care	20,711	20,412	20,383	20,238	27,953	29,834	25,865	23,519	25,546	29,340
With life insurance	20,498	20,201	20,172	20,451	28,574	30,482	29,293	26,175	29,078	33,495
With defined benefit plan	17,936	17,676	17,231	16,190	19,567	20,430	18,386	16,015	17,417	19,202
Time-off plans										
Participants with:										
Paid lunch time	10	9	9	10	11	10	8	9	–	–
Average minutes per day	–	25	26	27	29	26	30	29	–	–
Paid rest time	75	76	73	72	72	71	67	68	–	–
Average minutes per day	–	25	26	26	26	26	28	26	–	–
Paid funeral leave	–	–	–	88	85	84	80	83	80	81
Average days per occurrence	–	–	–	3.2	3.2	3.3	3.3	3.0	3.3	3.7
Paid holidays	99	99	99	99	96	97	92	91	89	89
Average days per year	10.1	10.0	9.8	10.0	9.4	9.2	10.2	9.4	9.1	9.3
Paid personal leave	20	24	23	25	24	22	21	21	22	20
Average days per year	–	3.8	3.6	3.7	3.3	3.1	3.3	3.1	3.3	3.5
Paid vacations	100	99	99	100	98	97	96	97	96	95
Paid sick leave [1]	62	67	67	70	69	68	67	65	58	56
Unpaid maternity leave	–	–	–	–	33	37	37	60	–	–
Unpaid paternity leave	–	–	–	–	16	18	26	53	–	–
Unpaid family leave	–	–	–	–	–	–	–	–	84	93
Insurance plans										
Participants in medical care plans	97	97	97	95	90	92	83	82	77	76
Percent of participants with coverage for:										
Home health care	–	–	46	66	76	75	81	86	78	85
Extended care facilities	58	62	62	70	79	80	80	82	73	78
Physical exam	–	–	8	18	28	28	30	42	56	63
Percent of participants with employee contribution required for:										
Self coverage	26	27	36	43	44	47	51	61	67	69
Average monthly contribution	–	–	$11.93	$12.80	$19.29	$25.31	$26.60	$31.55	$33.92	$39.14
Family coverage	46	51	58	63	64	66	69	76	78	80
Average monthly contribution	–	–	$35.93	$41.40	$60.07	$72.10	$96.97	$107.42	$118.33	$130.07
Participants in life insurance plans	96	96	96	96	92	94	94	91	87	87
Percent of participants with:										
Accidental death and dismemberment insurance	69	72	74	72	78	71	71	76	77	74
Survivor income benefits	–	–	–	10	8	7	6	5	7	6
Retiree protection available	–	64	64	59	49	42	44	41	37	33
Participants in long-term disability insurance plans	40	43	47	48	42	45	40	41	42	43
Participants in sickness and accident insurance plans	54	51	51	49	46	43	45	44	–	–
Participants in short-term disability plans [1]	–	–	–	–	–	–	–	–	53	55
Retirement plans										
Participants in defined benefit pension plans	84	84	82	76	63	63	59	56	52	50
Percent of participants with:										
Normal retirement prior to age 65	55	58	63	64	59	62	55	52	52	52
Early retirement available	98	97	97	98	98	97	98	95	96	95
Ad hoc pension increase in last 5 years	–	–	47	35	26	22	7	6	4	10
Terminal earnings formula	53	52	54	57	55	64	56	61	58	56
Benefit coordinated with Social Security	45	45	56	62	62	63	54	48	51	49
Participants in defined contribution plans	–	–	–	60	45	48	48	49	55	57
Participants in plans with tax-deferred savings arrangements	–	–	–	33	36	41	44	43	54	55
Other benefits										
Employees eligible for:										
Flexible benefits plans	–	–	–	2	5	9	10	12	12	13
Reimbursement accounts [2]	–	–	–	5	12	23	36	52	38	32
Premium conversion plans	–	–	–	–	–	–	–	–	5	7

[1] The definitions for paid sick leave and short-term disability (previously sickness and accident insurance) were changed for the 1995 survey. Paid sick leave now includes only plans that specify either a maximum number of days per year or unlimited days. Short-terms disability now includes all insured, self-insured, and State-mandated plans available on a per-disability basis, as well as the unfunded per-disability plans previously reported as sick leave. Sickness and accident insurance, reported in years prior to this survey, included only insured, self-insured, and State-mandated plans providing per-disability benefits at less than full pay.

[2] Prior to 1995, reimbursement accounts included premium conversion plans, which specifically allow medical plan participants to pay required plan premiums with pretax dollars. Also, reimbursement accounts that were part of flexible benefit plans were tabulated separately.

NOTE: Dash indicates data not available.

26. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, small private establishments and State and local governments, 1987, 1990, 1992, 1994, and 1996

Item	Small private establishments				State and local governments			
	1990	1992	1994	1996	1987	1990	1992	1994
Scope of survey (in 000's)	32,466	34,360	35,910	39,816	10,321	12,972	12,466	12,907
Number of employees (in 000's):								
With medical care	22,402	24,396	23,536	25,599	9,599	12,064	11,219	11,192
With life insurance	20,778	21,990	21,955	24,635	8,773	11,415	11,095	11,194
With defined benefit plan	6,493	7,559	5,480	5,883	9,599	11,675	10,845	11,708
Time-off plans								
Participants with:								
Paid lunch time	8	9	–	–	17	11	10	–
Average minutes per day	37	37	–	–	34	36	34	–
Paid rest time	48	49	–	–	58	56	53	–
Average minutes per day	27	26	–	–	29	29	29	–
Paid funeral leave	47	50	50	51	56	63	65	62
Average days per occurrence	2.9	3.0	3.1	3.0	3.7	3.7	3.7	3.7
Paid holidays	84	82	82	80	81	74	75	73
Average days per year[1]	9.5	9.2	7.5	7.6	10.9	13.6	14.2	11.5
Paid personal leave	11	12	13	14	38	39	38	38
Average days per year	2.8	2.6	2.6	3.0	2.7	2.9	2.9	3.0
Paid vacations	88	88	88	86	72	67	67	66
Paid sick leave [2]	47	53	50	50	97	95	95	94
Unpaid leave	17	18	–	–	57	51	59	–
Unpaid paternity leave	8	7	–	–	30	33	44	–
Unpaid family leave	–	–	47	48	–	–	–	93
Insurance plans								
Participants in medical care plans	69	71	66	64	93	93	90	87
Percent of participants with coverage for:								
Home health care	79	80	–	–	76	82	87	84
Extended care facilities	83	84	–	–	78	79	84	81
Physical exam	26	28	–	–	36	36	47	55
Percent of participants with employee contribution required for:								
Self coverage	42	47	52	52	35	38	43	47
Average monthly contribution	$25.13	$36.51	$40.97	$42.63	$15.74	$25.53	$28.97	$30.20
Family coverage	67	73	76	75	71	65	72	71
Average monthly contribution	$109.34	$150.54	$159.63	$181.53	$71.89	$117.59	$139.23	$149.70
Participants in life insurance plans	64	64	61	62	85	88	89	87
Percent of participants with:								
Accidental death and dismemberment insurance	78	76	79	77	67	67	74	64
Survivor income benefits	1	1	2	1	1	1	1	2
Retiree protection available	19	25	20	13	55	45	46	46
Participants in long-term disability insurance plans	19	23	20	22	31	27	28	30
Participants in sickness and accident insurance plans	6	26	26	–	14	21	22	21
Participants in short-term disability plans [2]	–	–	–	29	–	–	–	–
Retirement plans								
Participants in defined benefit pension plans	20	22	15	15	93	90	87	91
Percent of participants with:								
Normal retirement prior to age 65	54	50	–	47	92	89	92	92
Early retirement available	95	95	–	92	90	88	89	87
Ad hoc pension increase in last 5 years	7	4	–	–	33	16	10	13
Terminal earnings formula	58	54	–	53	100	100	100	99
Benefit coordinated with Social Security	49	46	–	44	18	8	10	49
Participants in defined contribution plans	31	33	34	38	9	9	9	9
Participants in plans with tax-deferred savings arrangements	17	24	23	28	28	45	45	24
Other benefits								
Employees eligible for:								
Flexible benefits plans	1	2	3	4	5	5	5	5
Reimbursement accounts [3]	8	14	19	12	5	31	50	64
Premium conversion plans	–	–	–	7	–	–	–	–

[1] Methods used to calculate the average number of paid holidays were revised in 1994 to count partial days more precisely. Average holidays for 1994 are not comparable with those reported in 1990 and 1992.

[2] The definitions for paid sick leave and short-term disability (previously sickness and accident insurance) were changed for the 1996 survey. Paid sick leave now includes only plans that specify either a maximum number of days per year or unlimited days. Short-term disability now includes all insured, self-insured, and State-mandated plans available on a per-disability basis, as well as the unfunded per-disability plans previously reported as sick leave. Sickness and accident insurance, reported in years prior to this survey, included only insured, self-insured, and State-mandated plans providing per-disability benefits at less than full pay.

[3] Prior to 1996, reimbursement accounts included premium conversion plans, which specifically allow medical plan participants to pay required plan premiums with pretax dollars. Also, reimbursement accounts that were part of flexible benefit plans were tabulated separately.

NOTE: Dash indicates data not available.

27. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1998												1999
	1997	1998	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.[P]
Number of stoppages:															
Beginning in period	29	34	1	3	1	0	4	4	3	6	1	5	3	3	1
In effect during period	34	34	1	3	2	0	4	6	6	7	4	7	7	6	5
Workers involved:															
Beginning in period (in thousands)	339	387	8.0	10.8	1.0	.0	6.1	162.9	5.5	144.7	28.9	8.0	7.1	3.8	1.4
In effect during period (in thousands)	351	387	8.0	10.8	2.1	.0	6.1	165.4	163.1	145.9	42.6	10.6	13.7	10.4	9.2
Days idle:															
Number (in thousands)	4,497	5,116	16.0	38.6	21.5	0.0	72.7	1,542.9	2,043.2	580.4	320.4	148.7	160.3	171.0	129.0
Percent of estimated working time[1]	.01	.02	.00	.00	.00	.00	.00	.05	.07	.02	.01	.01	.01	.01	.01

[1] Agricultural and government employees are included in the total employed and total working time; private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found in " 'Total economy' measures of strike idleness," *Monthly Labor Review*, October 1968, pp. 54–56.
[P] = preliminary.

28. Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS															
All items	160.5	163.0	162.5	162.8	163.0	163.2	163.4	163.6	164.0	164.0	163.9	164.3	164.5	165.0	166.2
Food and beverages	157.7	161.1	160.2	160.7	160.6	160.9	161.4	161.5	162.4	162.5	162.7	163.9	163.8	163.7	163.9
Food	157.3	160.7	159.8	160.3	160.1	160.5	161.0	161.1	162.0	162.1	162.3	163.6	163.3	163.3	163.4
Food at home	158.1	161.1	160.2	160.7	160.5	160.8	161.4	161.2	162.5	162.5	162.6	164.3	163.8	163.4	163.5
Cereals and bakery products	177.6	181.1	180.2	180.5	181.6	181.8	182.7	181.9	182.2	182.1	182.3	184.2	183.8	183.5	184.8
Meats, poultry, fish, and eggs	148.5	147.3	146.3	146.2	146.3	146.9	148.2	147.5	148.0	147.9	147.3	146.4	147.0	146.8	146.7
Dairy and related products[1]	145.5	150.8	148.5	148.1	148.1	148.2	150.5	152.9	155.0	155.9	157.6	161.2	162.3	161.5	156.1
Fruits and vegetables	187.5	198.2	197.5	203.9	198.1	198.2	195.9	193.5	199.5	198.8	200.7	208.6	200.3	199.9	203.3
Nonalcoholic beverages and beverage materials	133.4	133.0	133.9	132.9	132.8	132.3	132.0	132.2	132.6	132.7	131.7	133.5	134.5	134.5	134.3
Other foods at home	147.3	150.8	149.6	149.3	150.4	151.1	152.1	152.2	152.7	152.7	152.4	153.0	153.3	152.9	153.6
Sugar and sweets	147.8	150.2	150.1	149.5	150.5	149.9	150.2	150.8	150.5	149.6	150.1	151.7	151.3	151.0	151.7
Fats and oils	141.7	146.9	140.7	141.2	143.3	147.6	149.7	152.4	156.8	155.1	151.9	150.5	150.9	149.4	149.0
Other foods	161.2	165.5	165.0	164.7	165.6	165.9	166.9	166.3	166.0	166.7	166.9	167.7	168.2	168.1	169.2
Other miscellaneous foods[1,2]	–	102.6	101.7	101.4	102.5	102.6	103.5	103.6	103.5	104.8	104.9	104.1	105.9	104.9	105.6
Food away from home[1]	157.0	161.1	160.2	160.6	160.7	161.1	161.5	162.1	162.3	162.6	163.0	163.5	163.8	164.2	164.5
Other food away from home[1,2]	–	101.6	100.6	100.6	101.0	101.6	102.3	102.7	102.7	103.3	103.3	103.5	103.7	103.7	104.0
Alcoholic beverages	162.8	165.7	165.2	165.2	165.5	165.6	165.7	166.3	166.6	166.8	167.2	167.6	168.6	168.4	168.8
Housing	156.8	160.4	159.5	159.7	160.6	161.2	161.5	161.5	131.4	161.3	161.3	161.8	162.3	162.8	163.0
Shelter	176.3	182.1	181.0	181.2	181.8	182.6	183.3	183.4	183.9	184.0	184.0	184.7	185.5	186.3	186.6
Rent of primary residence	166.7	172.1	170.7	171.1	171.7	172.2	172.8	173.4	173.9	174.5	174.9	175.3	175.6	176.0	176.4
Lodging away from home[2]	–	109.0	110.2	108.7	109.6	111.7	112.9	109.8	109.5	106.3	103.8	107.1	110.5	114.5	114.6
Owners' equivalent rent of primary residence[3]	181.9	187.8	186.4	186.8	187.4	188.0	188.5	189.2	189.8	190.3	190.7	191.0	191.3	191.5	191.9
Tenants' and household insurance[1,2]	–	99.8	100.4	99.6	99.1	99.3	99.2	99.2	99.7	99.9	99.9	99.7	100.1	100.2	100.3
Fuels and utilities	130.8	128.5	127.0	127.9	131.2	131.3	130.6	130.0	127.1	126.5	126.6	126.2	126.0	125.9	125.7
Fuels	117.9	113.7	112.3	113.2	116.8	116.8	115.9	115.2	112.0	111.4	111.4	110.9	110.6	110.5	110.2
Fuel oil and other fuels	99.8	90.0	92.8	91.8	89.5	87.8	86.7	85.9	86.4	86.8	86.1	86.6	86.2	86.2	87.7
Gas (piped) and electricity	125.1	121.2	119.4	120.5	124.7	124.9	124.0	123.3	119.6	118.9	118.9	118.3	118.0	117.9	117.5
Household furnishings and operations	125.4	126.6	127.0	126.6	126.7	127.2	126.8	126.5	126.6	126.6	126.6	126.8	126.7	126.7	127.2
Apparel	132.9	133.0	135.8	135.3	132.5	129.6	131.6	133.6	135.6	135.0	130.7	127.9	129.7	132.7	135.2
Men's and boys' apparel	130.1	131.8	133.4	133.5	131.0	129.4	130.6	131.1	134.1	134.1	130.3	128.1	129.9	131.4	133.5
Women's and girls' apparel	126.1	126.0	130.9	129.7	125.8	120.6	123.8	127.8	128.8	127.5	122.4	117.7	120.6	126.3	128.7
Infants' and toddlers' apparel[1]	129.0	126.1	126.6	126.9	124.7	122.0	124.4	124.9	130.2	131.3	129.6	130.0	126.4	125.6	128.2
Footwear	127.6	128.0	127.9	128.3	128.2	127.0	127.7	128.6	130.3	130.4	127.5	125.6	124.8	126.4	129.2
Transportation	144.3	141.6	141.5	142.0	141.7	141.8	141.2	140.7	141.3	141.5	140.7	140.4	139.8	140.6	144.3
Private transportation	141.0	137.9	137.7	138.4	138.2	138.0	137.4	137.0	137.7	138.0	137.2	136.7	135.9	136.4	140.1
New and used motor vehicles[2]	100.5	100.1	100.1	99.9	99.7	99.9	99.9	99.8	100.1	100.7	100.9	100.6	99.9	99.6	99.7
New vehicles	144.3	143.4	144.3	143.3	142.6	142.7	142.8	142.3	142.5	143.5	144.1	144.4	143.8	143.4	143.3
Used cars and trucks[1]	151.1	150.6	148.2	150.0	150.9	151.3	151.1	151.9	153.0	154.0	153.1	150.6	148.3	147.4	148.3
Motor fuel	106.2	92.2	91.7	94.7	94.8	93.7	91.6	90.0	90.8	89.7	86.2	85.0	83.6	86.3	100.9
Gasoline (all types)	105.8	91.6	91.1	94.2	94.3	93.2	91.1	89.5	90.3	89.2	85.7	84.5	83.1	85.8	100.4
Motor vehicle parts and equipment	101.9	101.1	100.5	100.6	101.0	101.1	101.2	101.2	101.4	101.4	101.2	101.2	100.9	100.1	100.3
Motor vehicle maintenance and repair	162.7	167.1	165.7	165.9	166.5	166.8	167.3	168.3	169.0	169.5	169.6	169.8	170.4	170.6	170.9
Public transportation	186.7	190.3	193.4	190.4	188.2	192.0	192.2	190.2	189.9	187.4	188.4	190.4	193.1	198.8	201.4
Medical care	234.6	242.1	240.7	241.4	242.0	242.7	243.5	243.9	244.3	244.7	245.2	246.6	247.7	248.3	249.1
Medical care commodities	215.3	221.8	220.2	221.5	222.1	222.2	223.1	224.0	224.2	224.5	225.6	225.9	226.8	227.7	229.3
Medical care services	239.1	246.8	245.4	245.9	246.5	247.4	248.2	248.4	249.0	249.3	249.6	251.3	252.6	253.1	253.5
Professional services	215.4	222.2	221.1	221.7	222.5	222.8	223.3	223.7	224.2	224.4	224.6	225.8	226.8	227.4	228.2
Hospital and related services	278.4	287.5	285.6	285.6	285.8	288.2	289.5	289.2	290.2	290.8	291.4	294.4	296.2	296.6	296.3
Recreation[2]	99.6	101.1	101.1	101.0	101.2	101.1	101.3	101.3	101.1	101.3	101.2	101.7	101.8	101.8	102.0
Video and audio[1,2]	99.4	101.1	101.4	101.2	101.2	101.1	101.2	101.4	101.1	100.8	100.7	101.4	101.6	101.2	101.0
Education and communication[2]	98.4	100.3	99.9	100.1	100.1	100.0	100.1	100.9	101.0	101.0	100.7	100.9	100.9	100.8	100.7
Education[2]	97.3	102.1	100.7	100.9	100.8	101.0	102.6	104.3	104.5	104.6	104.7	105.0	105.3	105.4	105.5
Educational books and supplies	238.4	250.8	248.8	248.9	248.6	249.0	249.1	253.7	257.0	257.1	257.3	258.4	261.3	261.4	261.2
Tuition, other school fees, and child care	280.4	294.2	290.0	290.5	290.4	291.1	295.8	300.9	301.2	301.4	301.7	302.4	303.3	303.5	303.8
Communication[1,2]	100.3	98.7	99.3	99.4	99.4	99.1	97.9	97.9	97.8	97.8	97.1	97.3	96.9	96.6	96.3
Information and information processing[1,2]	100.4	98.5	99.2	99.3	99.3	99.0	97.7	97.7	97.6	97.6	96.9	96.9	96.5	96.1	95.8
Telephone services[1,2]	–	100.7	100.5	101.1	101.4	101.5	100.4	100.7	100.7	101.1	100.3	100.7	100.4	100.2	100.0
Information and information processing other than telephone services[1,4]	50.1	39.9	42.8	41.5	40.6	39.1	37.6	36.7	36.1	35.3	34.8	33.8	33.3	32.4	32.1
Personal computers and peripheral equipment[1,2]	–	78.2	86.6	82.7	80.0	75.2	71.1	68.5	67.5	65.6	64.2	61.4	59.7	57.6	56.8
Other goods and services	224.8	237.7	234.7	236.7	236.4	237.8	238.0	240.4	241.3	240.5	250.3	255.4	255.0	253.3	256.1
Tobacco and smoking products	243.7	274.8	263.5	270.0	266.9	273.2	273.7	283.5	284.9	281.3	331.2	354.2	348.7	335.9	349.9
Personal care[1]	152.7	156.7	155.9	156.6	156.8	157.0	157.1	157.5	158.1	158.0	158.3	158.9	159.4	160.0	160.2
Personal care products[1]	144.2	148.3	147.3	149.3	149.2	149.1	148.5	149.1	149.4	148.8	148.7	149.9	149.8	150.8	150.9
Personal care services[1]	162.4	166.0	165.2	165.4	165.3	166.1	166.6	167.1	167.5	167.6	168.3	168.8	169.3	169.9	170.3
Miscellaneous personal services	226.1	234.7	233.5	234.0	234.7	235.1	235.7	236.2	236.9	237.2	237.8	238.9	240.6	241.1	241.4

28. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Commodity and service group:															
Commodities	141.8	141.9	142.0	142.3	141.8	141.6	141.7	141.8	142.6	142.5	142.2	142.5	142.2	142.6	144.6
Food and beverages	157.7	161.1	160.2	160.7	160.6	160.9	161.4	161.5	162.4	162.5	162.7	163.9	163.8	163.7	163.9
Commodities less food and beverages	132.2	130.5	131.0	131.3	130.6	130.1	130.0	130.2	130.8	130.6	130.2	129.9	129.6	130.2	133.2
Nondurables less food and beverages	134.6	132.6	133.0	134.0	133.0	131.8	131.9	132.6	133.6	132.9	132.1	131.8	131.9	133.2	138.6
Apparel	132.9	133.0	135.8	135.3	132.5	129.6	131.6	133.6	135.6	135.0	130.7	127.9	129.7	132.7	135.2
Nondurables less food, beverages, and apparel	140.6	137.4	136.6	138.4	138.2	138.0	137.1	137.1	137.6	136.8	137.8	138.8	138.0	138.5	145.7
Durables	128.7	127.6	128.1	127.6	127.4	127.5	127.2	126.8	126.9	127.4	127.4	127.1	126.4	126.0	126.1
Services	179.4	184.2	183.2	183.4	184.2	184.9	185.3	185.5	185.5	185.6	185.7	186.3	186.9	187.6	187.8
Rent of shelter[3]	183.4	189.6	188.4	188.6	189.3	190.1	190.8	191.0	191.5	191.5	191.5	192.3	193.1	193.9	194.3
Transporatation services	185.0	187.9	188.3	187.8	187.1	187.8	187.8	187.3	188.2	188.3	188.4	188.8	189.3	190.7	191.0
Other services	209.6	216.9	215.6	216.1	216.6	216.9	217.6	219.0	219.0	219.5	219.5	220.5	221.1	221.3	221.7
Special indexes:															
All items less food	161.1	163.4	163.0	163.3	163.5	163.6	163.9	164.1	164.4	164.3	164.2	164.5	164.7	165.3	166.7
All items less shelter	155.9	157.2	156.9	157.3	157.3	157.3	157.4	157.6	157.9	157.9	157.8	158.1	158.1	158.5	159.9
All items less medical care	156.3	158.6	158.1	158.4	158.6	158.7	159.0	159.2	159.5	159.5	159.4	159.8	160.0	160.5	161.6
Commodities less food	133.4	132.0	132.4	132.7	132.1	131.5	131.4	131.6	132.3	132.1	131.7	131.4	131.1	131.7	134.6
Nondurables less food	136.3	134.6	135.0	135.9	134.9	133.8	133.9	134.6	135.6	135.0	134.2	133.9	134.0	135.3	140.4
Nondurables less food and apparel	141.8	139.2	138.4	140.1	139.9	139.7	138.9	138.9	139.5	138.8	139.7	140.7	140.0	140.5	147.0
Nondurables	146.4	146.9	146.7	147.5	146.9	146.4	146.8	147.1	148.1	147.8	147.5	147.9	147.9	148.5	151.4
Services less rent of shelter[3]	188.1	191.8	190.8	191.1	192.1	192.6	192.7	193.0	192.6	192.7	192.8	193.3	193.8	194.2	194.5
Services less medical care services	173.9	178.4	177.4	177.6	178.4	179.0	179.5	179.6	179.7	179.7	179.8	180.3	180.9	181.5	181.8
Energy	111.5	102.9	101.9	103.8	105.7	105.2	103.8	102.7	101.3	100.5	98.9	98.1	97.3	98.4	105.0
All items less energy	167.1	170.9	170.4	170.5	170.5	170.8	171.2	171.6	172.2	172.3	172.3	172.9	173.2	173.7	174.2
All items less food and energy	169.5	173.4	173.0	173.1	173.0	173.3	173.8	174.2	174.7	174.8	174.8	175.3	175.7	176.2	176.8
Commodities less food and energy	142.3	143.2	143.8	143.6	142.8	142.4	142.7	143.2	143.8	143.8	143.9	143.7	143.7	143.9	144.9
Energy commodities	105.7	92.1	91.8	94.6	94.5	93.3	91.3	89.8	90.5	89.6	86.3	85.2	83.9	86.4	99.9
Services less energy	185.0	190.6	189.7	189.8	190.3	190.9	191.5	191.8	192.3	192.4	192.5	193.2	194.0	194.7	195.0
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS															
All items	157.6	159.7	159.1	159.5	159.7	159.8	160.0	160.2	160.6	160.7	160.7	161.0	161.1	161.4	162.7
Food and beverages	157.2	160.4	159.5	159.9	159.9	160.2	160.7	160.8	161.6	161.7	161.9	163.1	163.0	162.9	163.0
Food	156.8	160.0	159.1	159.6	159.5	159.8	160.4	160.4	161.3	161.4	161.5	162.8	162.6	162.6	162.6
Food at home	157.2	160.0	159.1	159.6	159.4	159.7	160.4	160.2	161.3	161.3	161.3	163.1	162.6	162.3	162.2
Cereals and bakery products	177.3	180.9	179.9	180.3	181.4	181.6	182.5	181.8	181.9	181.9	182.0	184.0	183.5	183.2	184.5
Meats, poultry, fish, and eggs	148.2	147.0	146.0	145.8	145.9	146.6	147.9	147.1	147.5	147.6	146.9	146.0	146.7	146.4	146.3
Dairy and related products[1]	145.2	150.4	148.2	147.8	147.7	147.8	150.1	152.6	154.6	155.5	157.4	161.1	162.2	161.5	155.7
Fruits and vegetables	186.6	197.0	196.3	202.8	197.1	197.3	194.9	192.5	198.4	197.6	199.0	207.3	199.3	198.7	201.7
Nonalcoholic beverages and beverage materials	132.3	131.8	132.7	131.6	131.6	131.2	130.7	130.9	131.3	131.4	130.4	132.5	133.4	133.6	133.2
Other foods at home	146.8	150.2	148.9	148.7	149.8	150.5	151.5	151.7	151.9	152.0	151.7	152.4	152.6	152.3	153.0
Sugar and sweets	147.7	150.1	150.0	149.4	150.5	149.9	150.3	150.6	150.2	149.5	150.0	151.8	151.3	151.1	151.7
Fats and oils	141.4	146.5	140.4	141.1	143.1	147.3	149.3	151.9	156.1	154.4	151.2	150.1	150.6	148.9	148.6
Other foods	161.1	165.4	165.0	164.6	165.5	165.9	166.8	166.3	165.7	166.6	166.7	167.7	168.1	168.0	169.0
Other miscellaneous foods[1,2]	–	102.6	101.7	101.5	102.5	102.8	103.5	103.7	103.3	104.9	104.9	104.2	105.9	105.0	105.2
Food away from home[1]	157.0	161.1	160.2	160.6	160.8	161.1	161.4	162.0	162.3	162.6	163.0	163.5	163.8	164.1	164.4
Other food away from home[1,2]	–	101.6	100.6	100.6	101.0	101.5	102.2	102.8	102.8	103.4	103.4	103.6	103.7	103.8	104.1
Alcoholic beverages	162.1	164.6	164.2	164.1	164.3	164.5	164.6	165.1	165.4	165.7	166.2	166.5	167.6	167.3	167.8
Housing	153.4	156.7	155.8	156.1	157.0	157.6	157.7	157.8	157.6	157.7	157.8	158.1	158.4	158.8	159.1
Shelter	171.2	176.6	175.5	175.7	176.4	177.0	177.6	177.9	178.4	178.6	178.8	179.3	179.9	180.5	180.8
Rent of primary residence	166.3	171.7	170.3	170.8	171.3	171.8	172.4	173.0	173.5	174.1	174.6	174.9	175.3	175.6	176.0
Lodging away from home[2]	–	109.0	110.3	108.6	110.0	111.9	112.8	109.8	109.7	106.6	104.0	107.1	110.3	114.2	114.5
Owners' equivalent rent of primary residence[3]	165.8	171.1	169.9	170.2	170.8	171.2	171.8	172.4	172.9	173.4	173.7	173.9	174.2	174.5	174.8
Tenants' and household insurance[1,2]	–	100.0	100.5	99.7	99.3	99.4	99.4	99.4	100.0	100.3	100.3	100.1	100.4	100.6	100.6
Fuels and utilities	130.5	128.4	126.9	127.9	131.3	131.5	130.6	130.0	126.9	126.4	126.4	126.0	125.8	125.8	125.5
Fuels	117.3	113.3	111.8	112.9	116.5	116.6	115.6	114.9	111.6	110.9	110.9	110.4	110.2	110.0	109.7
Fuel oil and other fuels	99.6	90.3	93.1	92.0	90.0	88.2	87.0	86.2	86.9	87.4	86.6	87.1	86.8	85.8	88.1
Gas (piped) and electricity	124.6	120.8	118.9	120.2	124.5	124.6	123.6	122.9	119.1	118.3	118.4	117.7	117.5	117.3	116.9
Household furnishings and operations	123.9	125.0	125.6	125.2	125.2	125.6	125.2	124.9	124.9	124.8	124.8	125.0	124.8	124.9	125.2
Apparel	132.1	131.6	134.0	133.7	131.0	128.2	129.9	132.0	134.3	134.0	129.8	127.1	128.5	131.1	133.7
Men's and boys' apparel	129.9	131.4	132.9	133.1	130.7	129.1	129.9	130.7	134.1	134.0	130.2	128.1	129.9	131.6	133.6
Women's and girls' apparel	124.9	123.9	128.3	127.4	123.4	118.6	121.3	125.5	126.9	125.9	121.0	116.4	118.8	123.9	126.5
Infants' and toddlers' apparel[1]	130.1	126.7	126.9	127.4	125.4	122.7	125.0	125.8	131.0	132.7	130.9	130.8	127.2	126.5	129.3
Footwear	128.5	128.7	128.4	129.0	128.8	127.4	128.4	129.3	130.9	130.9	128.2	126.1	125.4	126.8	129.5
Transportation	143.6	140.5	140.3	141.1	140.9	140.8	140.2	139.6	140.4	140.6	139.6	139.1	138.3	139.1	142.9
Private transportation	141.3	138.0	137.7	138.6	138.5	138.2	137.6	137.1	137.9	138.2	137.1	136.5	135.6	136.2	140.1
New and used motor vehicles[2]	100.7	100.3	100.1	100.1	100.0	100.2	100.2	100.1	100.4	101.1	101.1	100.6	99.9	99.5	99.7
New vehicles	145.5	144.6	145.5	144.5	143.8	143.9	144.0	143.4	143.6	144.7	145.3	145.5	145.0	144.5	144.5
Used cars and trucks[1]	152.6	152.0	149.5	151.3	152.3	152.7	152.4	153.2	154.2	155.2	154.3	151.8	149.6	148.7	149.6

28. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Motor fuel	106.2	92.2	91.9	95.0	95.0	93.9	91.7	90.1	90.9	89.7	86.0	85.0	83.5	86.4	100.8
Gasoline (all types)	105.8	91.7	91.3	94.5	94.5	93.4	91.2	89.6	90.4	89.2	85.5	84.5	83.0	85.9	100.3
Motor vehicle parts and equipment	101.0	100.5	99.9	99.9	100.3	100.5	100.5	100.5	100.7	100.7	100.5	100.6	100.5	99.8	99.6
Motor vehicle maintenance and repair	163.7	168.2	166.8	167.0	167.6	168.0	168.4	169.4	170.3	170.8	170.9	171.2	171.8	172.0	172.3
Public transportation	184.2	187.1	190.1	187.4	185.5	188.7	188.9	186.5	186.3	184.2	185.1	186.8	189.1	194.1	196.4
Medical care	234.0	241.4	239.9	240.6	241.4	242.1	242.8	243.2	243.7	244.0	244.4	245.8	246.9	247.5	248.2
Medical care commodities	212.6	218.6	217.0	218.3	218.9	219.1	219.9	220.8	220.8	221.1	222.1	222.4	223.2	223.9	225.7
Medical care services	238.8	246.6	245.1	245.6	246.4	247.2	248.0	248.2	248.8	249.1	249.4	251.0	252.3	252.8	253.3
Professional services	216.7	223.7	222.5	223.2	224.1	224.4	224.8	225.3	225.8	225.9	226.2	227.3	228.3	228.9	229.7
Hospital and related services	274.7	283.6	281.7	281.7	282.0	284.3	285.6	285.3	286.4	286.9	287.4	290.4	292.4	292.8	292.3
Recreation[2]	–	100.9	101.0	100.9	101.0	100.9	101.1	101.0	100.8	100.8	100.8	101.2	101.3	101.3	101.4
Video and audio[1,2]	–	101.1	101.4	101.1	101.1	101.0	101.1	101.3	101.0	100.8	100.7	101.3	101.4	101.0	100.8
Education and communication[2]	–	100.4	100.1	100.3	100.3	100.2	100.3	101.1	101.1	101.2	100.9	101.2	101.2	101.0	100.9
Education[2]	–	102.1	100.7	100.9	100.9	101.1	102.6	104.3	104.5	104.6	104.7	105.1	105.5	105.6	105.7
Educational books and supplies	240.4	253.1	251.2	251.3	250.9	251.3	251.3	255.9	259.4	259.5	259.7	260.8	263.9	264.0	263.9
Tuition, other school fees, and child care	274.6	288.5	284.4	284.9	284.7	285.3	289.9	294.9	295.2	295.4	295.8	296.6	297.8	298.0	298.3
Communication[1,2]	–	99.1	99.5	99.7	99.8	99.6	98.4	98.5	98.4	98.5	97.8	98.1	97.7	97.4	97.0
Information and information processing[1,2]	–	99.0	99.5	99.7	99.8	99.5	98.3	98.4	98.3	98.4	97.7	97.8	97.4	97.1	96.7
Telephone services[1,2]	–	100.7	100.5	101.2	101.4	101.5	100.5	100.8	100.8	101.2	100.4	100.8	100.5	100.4	100.0
Information and information processing other than telephone services[1,4]	51.1	41.2	44.1	42.6	41.8	40.2	38.9	38.2	37.4	36.6	36.0	35.0	34.4	33.5	33.0
Personal computers and peripheral equipment[1,2]	–	77.9	86.0	81.9	79.5	74.4	71.2	69.0	67.5	65.3	64.0	61.1	59.3	56.9	55.9
Other goods and services	221.6	236.1	232.3	234.8	234.0	236.0	236.2	239.4	240.4	239.2	252.6	259.2	258.3	255.6	259.5
Tobacco and smoking products	243.3	274.8	263.6	270.1	266.8	273.4	273.7	283.7	285.2	281.4	332.0	354.5	348.9	336.0	350.5
Personal care[1]	152.6	156.8	155.9	156.7	156.8	157.0	157.2	157.7	158.3	158.1	158.3	159.1	159.6	160.3	160.4
Personal care products[1]	145.1	149.3	148.4	150.5	150.3	150.1	149.6	150.1	150.4	149.8	149.6	150.7	150.8	151.6	151.7
Personal care services[1]	162.5	166.3	165.5	165.7	165.6	166.4	167.0	167.4	167.8	168.0	168.6	169.1	169.6	170.2	170.6
Miscellaneous personal services	225.2	234.0	232.5	233.0	233.6	233.9	234.9	236.0	236.6	236.9	237.4	239.1	240.8	241.4	241.7
Commodity and service group:															
Commodities	141.8	141.8	141.6	142.1	141.7	141.5	141.5	141.7	142.4	142.4	142.3	142.5	142.2	142.5	144.7
Food and beverages	157.2	160.4	159.5	159.9	159.9	160.2	160.7	160.8	161.6	161.7	161.9	163.1	163.0	162.9	163.0
Commodities less food and beverages	132.4	130.6	130.9	131.4	130.7	130.3	130.0	130.3	131.0	130.9	130.6	130.4	129.9	130.3	133.6
Nondurables less food and beverages	134.5	132.1	132.3	133.6	132.5	131.4	131.3	132.1	133.2	132.5	132.1	132.0	131.8	133.1	139.1
Apparel	132.1	131.6	134.0	133.7	131.0	128.2	129.9	132.0	134.3	134.0	129.8	127.1	128.5	131.1	133.7
Nondurables less food, beverages, and apparel	140.4	137.0	136.0	138.2	137.8	137.7	136.6	136.6	137.3	136.3	137.9	139.2	138.2	138.7	146.7
Durables	128.4	127.3	127.6	127.3	127.2	127.3	127.0	126.7	126.9	127.4	127.4	126.9	126.1	125.7	125.8
Services	176.5	181.0	179.9	180.3	181.1	181.6	181.9	182.2	182.3	182.4	182.5	183.0	183.5	184.0	184.2
Rent of shelter[3]	164.7	170.1	169.0	169.2	169.8	170.4	171.0	171.3	171.8	172.0	172.2	172.7	173.2	173.8	174.1
Transporatation services	182.6	185.4	185.7	185.4	184.9	185.2	185.1	184.7	185.8	186.1	186.1	186.4	186.8	187.8	187.9
Other services	206.4	213.7	212.4	213.0	213.4	213.7	214.3	215.7	215.7	216.2	216.1	217.1	217.7	217.8	218.1
Special indexes:															
All items less food	157.6	159.5	159.0	159.4	159.6	159.7	159.8	160.0	160.4	160.4	160.4	160.5	160.6	161.1	162.6
All items less shelter	154.0	155.0	154.6	155.1	155.1	155.0	155.1	155.3	155.7	155.7	155.6	155.9	155.8	156.1	157.7
All items less medical care	154.0	155.8	155.3	155.7	155.9	156.0	156.1	156.3	156.8	156.8	156.8	157.1	157.1	157.5	158.8
Commodities less food	133.6	132.0	132.2	132.7	132.1	131.5	131.4	131.7	132.4	132.2	132.0	131.8	131.3	131.8	135.0
Nondurables less food	136.2	134.1	134.2	135.5	134.4	133.4	133.3	134.0	135.2	134.5	134.1	134.1	134.0	135.1	140.8
Nondurables less food and apparel	141.6	138.7	137.8	139.7	139.4	139.3	138.3	138.4	139.0	138.2	139.7	140.9	140.0	140.5	147.9
Nondurables	146.2	146.5	146.2	147.1	146.5	146.1	146.3	146.7	147.7	147.4	147.3	147.8	147.7	148.3	151.4
Services less rent of shelter[3]	167.6	170.7	169.8	170.2	171.2	171.5	171.5	171.8	171.3	171.4	171.5	171.9	172.3	172.6	172.7
Services less medical care services	171.2	175.4	174.4	174.7	175.5	176.0	176.3	176.6	176.6	176.8	176.9	177.3	177.8	178.2	178.4
Energy	111.1	102.1	101.1	103.2	105.0	104.5	102.9	101.8	100.5	99.6	97.8	97.0	96.1	97.5	104.5
All items less energy	164.1	167.6	167.1	167.3	167.2	167.4	167.8	168.3	168.9	169.1	169.3	169.8	170.0	170.2	170.7
All items less food and energy	166.0	169.6	169.1	169.3	169.2	169.4	169.8	170.3	170.9	171.1	171.3	171.6	171.9	172.2	172.9
Commodities less food and energy	141.9	142.7	143.1	143.1	142.3	142.0	142.2	142.8	143.5	143.6	144.1	144.0	143.7	143.7	144.8
Energy commodities	105.9	92.3	92.1	95.0	94.8	93.7	91.5	90.0	90.8	89.7	86.2	85.2	83.8	86.6	100.2
Services less energy	182.2	187.7	186.7	186.9	187.3	187.9	188.4	188.8	189.3	189.6	189.7	190.3	190.9	191.5	191.8

[1] Not seasonally adjusted.

[2] Indexes on a December 1997 = 100 base.

[3] Indexes on a December 1982 = 100 base.

[4] Indexes on a December 1988 = 100 base.

– Data not available.

NOTE: Index applies to a month as a whole, not to any specific date.

29. Consumer Price Index: U.S. city average and available local area data: all items

[1982–84 = 100, unless otherwise indicated]

Area	Pricing schedule[1]	All Urban Consumers							Urban Wage Earners						
		1998			1999				1998			1999			
		Mar.	Apr.	Dec.	Jan.	Feb.	Mar.	Apr.	Mar.	Apr.	Dec.	Jan.	Feb.	Mar.	Apr.
U.S. city average	M	162.2	162.5	163.9	164.3	164.5	165.0	166.2	158.7	159.1	160.7	161.0	161.1	161.4	162.7
Region and area size[2]															
Northeast urban	M	169.3	169.5	171.2	171.4	171.6	171.9	172.8	166.0	166.3	168.2	168.4	168.3	168.5	169.5
Size A—More than 1,500,000	M	170.2	170.2	172.2	172.5	172.4	172.8	173.6	165.8	166.0	168.2	168.5	168.1	168.3	169.3
Size B/C—50,000 to 1,500,000[3]	M	101.7	102.1	102.5	102.6	103.0	103.2	103.9	101.3	101.5	102.3	102.4	102.6	102.8	103.5
Midwest urban[4]	M	158.4	159.0	159.8	160.4	160.5	161.0	162.2	154.4	155.0	156.0	156.6	156.5	156.9	158.2
Size A—More than 1,500,000	M	159.5	160.1	161.0	161.6	161.8	162.4	163.6	154.7	155.4	156.5	157.1	157.2	157.5	158.8
Size B/C—50,000 to 1,500,000[3]	M	101.6	101.9	102.3	102.6	102.6	103.0	103.7	101.3	101.7	102.0	102.3	102.2	102.6	103.5
Size D—Nonmetropolitan (less than 50,000)	M	152.9	153.2	155.0	155.5	155.6	155.7	156.4	150.7	150.9	153.3	153.6	153.4	153.4	154.4
South urban	M	158.2	158.5	159.6	159.9	160.0	160.6	161.5	156.0	156.4	157.8	157.9	158.0	158.4	159.4
Size A—More than 1,500,000	M	157.2	157.6	158.3	158.9	158.9	159.7	160.5	154.7	155.1	156.0	156.4	156.4	156.9	157.9
Size B/C—50,000 to 1,500,000[3]	M	101.8	102.0	102.8	102.9	103.0	103.3	103.9	101.3	101.5	102.5	102.5	102.6	102.8	103.5
Size D—Nonmetropolitan (less than 50,000)	M	158.4	159.1	160.4	160.8	160.9	161.5	162.6	158.2	159.1	160.8	161.1	161.0	161.5	162.7
West urban	M	163.3	163.6	165.8	166.4	166.9	167.3	169.0	159.4	159.6	161.8	162.4	162.7	163.2	164.9
Size A—More than 1,500,000	M	163.8	164.2	166.5	167.3	167.8	168.2	170.0	158.1	158.5	160.8	161.6	161.9	162.3	164.2
Size B/C—50,000 to 1,500,000[3]	M	102.3	102.2	103.4	103.6	103.8	104.1	105.1	102.1	102.0	103.3	103.4	103.6	104.0	105.0
Size classes:															
A[5]	M	146.6	147.0	148.4	148.9	149.0	149.5	150.5	145.0	145.4	146.9	147.4	147.4	147.7	148.9
B/C[3]	M	101.8	102.0	102.7	102.9	103.0	103.3	104.1	101.4	101.6	102.5	102.6	102.6	102.9	103.7
D	M	158.1	158.5	160.2	160.6	160.7	161.1	162.1	156.8	157.3	159.2	159.6	159.4	159.8	160.9
Selected local areas[6]															
Chicago–Gary–Kenosha, IL–IN–WI	M	164.1	164.8	165.1	166.1	166.4	167.0	167.6	158.3	159.0	159.6	160.5	160.6	161.1	161.7
Los Angeles–Riverside–Orange County, CA	M	161.4	161.8	163.5	164.2	164.6	165.0	166.6	155.1	155.6	157.2	157.8	158.1	158.3	160.1
New York, NY–Northern NJ–Long Island, NY–NJ–CT–PA	M	173.0	173.0	174.7	175.0	175.1	175.5	176.0	168.2	168.5	170.5	170.8	170.6	170.8	171.3
Boston–Brockton–Nashua, MA–NH–ME–CT	1	171.3	–	–	174.1	–	174.8	–	169.3	–	–	172.2	–	172.3	–
Cleveland–Akron, OH	1	158.6	–	–	160.6	–	161.2	–	150.1	–	–	152.7	–	152.9	–
Dallas–Ft Worth, TX	1	153.0	–	–	155.0	–	156.4	–	152.8	–	–	154.6	–	155.8	–
Washington–Baltimore, DC–MD–VA–WV[7]	1	101.6	–	–	102.8	–	103.2	–	101.3	–	–	102.7	–	102.8	–
Atlanta, GA	2	–	160.8	161.6	–	161.9	–	164.0	–	157.7	158.8	–	159.1	–	160.9
Detroit–Ann Arbor–Flint, MI	2	–	159.1	161.2	–	161.2	–	164.1	–	153.5	155.9	–	155.8	–	158.7
Houston–Galveston–Brazoria, TX	2	–	146.3	146.1	–	146.6	–	148.3	–	144.8	144.8	–	145.0	–	146.6
Miami–Ft. Lauderdale, FL	2	–	160.2	161.1	–	161.4	–	161.7	–	157.4	158.7	–	158.8	–	159.1
Philadelphia–Wilmington–Atlantic City, PA–NJ–DE–MD	2	–	167.1	169.0	–	168.6	–	171.1	–	166.5	168.5	–	167.8	–	170.6
San Francisco–Oakland–San Jose, CA	2	–	164.6	167.4	–	169.4	–	172.2	–	160.8	163.7	–	165.7	–	168.8
Seattle–Tacoma–Bremerton, WA	2	–	166.4	169.4	–	170.6	–	172.2	–	161.9	164.9	–	166.0	–	167.8

[1] Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated:
M—Every month.
1—January, March, May, July, September, and November.
2—February, April, June, August, October, and December.

[2] Regions defined as the four Census regions.

[3] Indexes on a December 1996 = 100 base.

[4] The "North Central" region has been renamed the "Midwest" region by the Census Bureau. It is composed of the same geographic entities.

[5] Indexes on a December 1986 = 100 base.

[6] In addition, the following metropolitan areas are published semiannually and appear in tables 34 and 39 of the January and July issues of the *CPI Detailed Report*: Anchorage, AK; Cincinnati–Hamilton, OH–KY–IN; Denver–Boulder–Greeley, CO; Honolulu, HI; Kansas City, MO–KS; Milwaukee–Racine, WI; Minneapolis–St. Paul, MN–WI; Pittsburgh, PA; Portland–Salem, OR–WA; St Louis, MO–IL; San Diego, CA; Tampa–St. Petersburg–Clearwater, FL.

[7] Indexes on a November 1996 = 100 base.

– Data not available.

NOTE: Local area CPI indexes are byproducts of the national CPI program. Each local index has a smaller sample size and is, therefore, subject to substantially more sampling and other measurement error. As a result, local area indexes show greater volatility than the national index, although their long-term trends are similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in their escalator clauses. Index applies to a month as a whole, not to any specific date.

30. Annual data: Consumer Price Index, U.S. city average, all items and major groups

[1982–84 = 100]

Series	1990	1991	1992	1993	1994	1995	1996	1997	1998
Consumer Price Index for All Urban Consumers:									
All items:									
Index	130.7	136.2	140.3	144.5	148.2	152.4	156.9	160.5	163.0
Percent change	5.4	4.2	3.0	3.0	2.6	2.8	3.0	2.3	1.6
Food and beverages:									
Index	132.1	136.8	138.7	141.6	144.9	148.9	153.7	157.7	161.1
Percent change	5.8	3.6	1.4	2.1	2.3	2.8	3.2	2.6	2.2
Housing:									
Index	128.5	133.6	137.5	141.2	144.8	148.5	152.8	156.8	160.4
Percent change	4.5	4.0	2.9	2.7	2.5	2.6	2.9	2.6	2.3
Apparel:									
Index	124.1	128.7	131.9	133.7	133.4	132.0	131.7	132.9	133.0
Percent change	4.6	3.7	2.5	1.4	–.2	–1.0	–0.2	.9	.1
Transportation:									
Index	120.5	123.8	126.5	130.4	134.3	139.1	143.0	144.3	141.6
Percent change	5.6	2.7	2.2	3.1	3.0	3.6	2.8	0.9	–1.9
Medical care:									
Index	162.8	177.0	190.1	201.4	211.0	220.5	228.2	234.6	242.1
Percent change	9.0	8.7	7.4	5.9	4.8	4.5	3.5	2.8	3.2
Other goods and services:									
Index	159.0	171.6	183.3	192.9	198.5	206.9	215.4	224.8	237.7
Percent change	7.7	7.9	6.8	5.2	2.9	4.2	4.1	4.4	5.7
Consumer Price Index for Urban Wage Earners and Clerical Workers:									
All items:									
Index	129.0	134.3	138.2	142.1	145.6	149.8	154.1	157.6	159.7
Percent change	5.2	4.1	2.9	2.8	2.5	2.9	2.9	2.3	1.3

31. Producer Price Indexes, by stage of processing

[1982 = 100]

Grouping	Annual average		1998									1999			
	1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Finished goods	131.8	130.7	130.4	130.6	130.7	131.0	130.7	130.6	131.4	130.9	131.1	131.5	130.9	131.2	131.8
Finished consumer goods	130.2	128.9	128.5	128.9	129.1	129.4	129.2	129.1	129.8	129.0	129.4	130.0	129.2	129.6	130.4
Finished consumer foods	134.5	134.3	133.8	133.6	133.8	134.7	135.2	135.4	135.5	134.9	134.5	135.6	133.9	134.6	133.2
Finshed consumer goods excluding foods	128.2	126.4	126.0	126.7	127.0	127.0	126.4	126.3	127.1	126.4	127.1	127.5	127.0	127.3	129.1
Nondurable goods less food	124.3	122.2	121.5	122.8	123.4	123.3	122.7	122.8	122.5	121.4	122.7	123.4	122.7	123.2	125.9
Durable goods	133.7	132.9	133.0	132.3	131.8	132.0	131.5	131.0	134.4	134.4	133.8	133.4	133.4	133.1	132.9
Capital equipment	138.2	137.6	137.7	137.3	137.2	137.1	136.8	136.7	138.1	138.2	137.9	137.7	137.9	137.8	137.7
Intermediate materials, supplies, and components	125.6	123.0	123.3	123.5	123.5	123.5	123.2	122.9	122.3	121.8	120.9	121.2	120.5	120.8	121.6
Materials and components for manufacturing	128.3	126.1	126.9	126.8	126.3	126.0	126.0	125.5	125.0	124.6	124.1	124.2	123.6	123.5	123.3
Materials for food manufacturing	123.2	123.2	121.7	123.7	123.0	122.9	124.6	125.1	125.4	125.5	124.0	124.6	122.4	121.1	117.8
Materials for nondurable manufacturing	129.6	126.7	128.2	127.9	127.4	126.9	126.3	125.0	124.4	123.9	123.3	123.5	122.5	122.7	122.9
Materials for durable manufacturing	132.8	128.0	130.0	129.2	128.1	127.8	127.8	127.2	125.9	125.1	124.2	124.1	123.6	123.4	123.2
Components for manufacturing	126.4	125.9	126.0	126.0	126.0	125.8	125.8	125.8	125.8	125.8	125.8	125.7	125.7	125.7	125.7
Materials and components for construction	146.5	146.8	147.0	146.9	146.7	147.2	147.4	147.3	146.7	146.6	146.6	146.8	147.2	147.7	147.9
Processed fuels and lubricants	89.3	81.1	80.1	81.7	83.1	83.2	82.2	82.3	80.8	79.0	75.8	76.9	75.4	76.7	80.5
Containers	136.0	140.8	141.0	141.7	141.4	141.3	140.7	140.6	139.5	139.4	138.7	138.7	137.8	138.0	140.3
Supplies	135.9	134.8	135.1	134.8	134.7	135.1	134.7	134.3	134.1	134.3	134.3	134.2	133.9	133.7	133.9
Crude materials for further processing	111.1	96.8	100.3	100.5	97.6	98.1	94.3	92.1	94.0	93.6	89.8	90.9	87.9	89.5	90.4
Foodstuffs and feedstuffs	112.2	103.9	105.8	106.2	106.2	103.7	103.3	101.3	103.7	102.4	97.0	101.6	98.8	98.9	95.8
Crude nonfood materials	106.4	88.4	92.9	92.9	88.2	90.6	84.7	82.5	83.9	84.1	81.6	80.3	77.3	79.8	83.5
Special groupings:															
Finished goods, excluding foods	130.9	129.5	129.2	129.6	129.7	129.7	129.2	129.1	130.1	129.6	130.0	130.2	129.9	130.1	131.3
Finished energy goods	83.4	75.1	74.7	76.3	77.2	76.9	75.4	75.4	74.6	72.8	70.8	71.7	70.6	71.4	75.8
Finished goods less energy	140.2	141.1	140.9	140.7	140.6	141.0	141.1	141.0	142.2	142.1	142.9	143.1	142.7	142.8	142.4
Finished consumer goods less energy	141.0	142.5	142.0	141.9	142.0	142.5	142.7	142.7	143.8	143.6	144.9	145.3	144.6	144.8	144.2
Finished goods less food and energy	142.4	143.7	143.5	143.4	143.3	143.4	143.3	143.1	144.7	144.8	146.1	146.0	146.0	146.0	145.9
Finished consumer goods less food and energy	145.1	147.7	147.3	147.3	147.2	147.4	147.5	147.4	149.1	149.1	151.6	151.6	151.5	151.4	151.3
Consumer nondurable goods less food and energy	153.4	159.1	158.2	158.8	159.0	159.2	159.8	160.0	160.3	160.3	165.4	165.7	165.5	165.7	165.8
Intermediate materials less foods and feeds	125.7	123.4	123.8	123.9	124.0	123.9	123.6	123.4	122.7	122.2	121.3	121.5	121.0	121.3	122.3
Intermediate foods and feeds	125.4	116.2	115.6	116.3	115.6	116.4	116.5	115.2	114.6	115.5	114.5	114.9	112.7	110.9	108.7
Intermediate energy goods	89.0	80.8	79.9	81.5	82.8	82.9	81.9	82.0	80.5	78.8	75.5	76.8	75.1	76.4	80.2
Intermediate goods less energy	133.7	132.4	133.0	132.9	132.5	132.5	132.4	132.0	131.5	131.4	131.1	131.0	130.7	130.7	130.7
Intermediate materials less foods and energy	134.2	133.5	134.1	133.9	133.6	133.6	133.4	133.1	132.7	132.4	132.1	132.1	131.9	132.0	132.2
Crude energy materials	87.3	68.6	72.7	72.7	66.9	70.9	64.5	62.2	65.6	66.9	64.2	62.4	57.8	61.3	66.5
Crude materials less energy	123.5	113.6	116.4	116.6	116.4	113.9	112.5	110.6	111.1	109.3	104.9	108.3	106.8	106.7	104.1
Crude nonfood materials less energy	156.5	142.1	147.6	147.2	146.6	143.8	139.8	137.9	133.2	130.2	128.1	128.7	130.7	130.0	128.9

32. Producer Price Indexes for the net output of major industry groups

[December 1984 = 100, unless otherwise indicated]

SIC	Industry	Annual average		1998									1999			
		1997	1998	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
–	**Total mining industries**	86.1	70.8	74.1	74.2	69.6	72.3	67.7	65.7	67.9	68.9	66.8	65.0	62.1	64.6	68.0
10	Metal mining	85.8	73.2	76.6	75.5	73.9	74.7	71.6	72.4	71.0	71.0	69.5	68.0	69.1	68.9	67.9
12	Coal mining (12/85 = 100)	92.2	89.5	90.7	90.2	90.2	89.9	87.6	87.3	88.8	89.6	91.4	89.7	87.1	88.7	89.2
13	Oil and gas extraction (12/85 = 100)	87.5	68.3	72.3	72.6	66.6	70.1	64.6	61.8	64.6	65.9	62.9	60.8	57.3	60.3	64.7
14	Mining and quarrying of nonmetallic minerals, except fuels	128.8	132.2	132.2	132.2	132.5	132.6	132.8	132.9	132.9	132.8	132.7	132.9	133.1	133.7	134.1
–	**Total manufacturing industries**	127.5	126.1	126.2	126.4	126.2	126.2	126.0	125.9	126.4	126.2	125.9	126.3	126.0	126.2	127.4
20	Food and kindred products	127.9	126.3	125.5	125.9	126.4	126.6	127.4	127.1	126.6	126.6	126.1	126.7	125.9	125.5	124.2
21	Tobacco manufactures	210.8	243.1	231.0	237.7	237.9	237.9	246.4	247.0	247.7	248.4	316.0	316.0	315.9	315.8	316.0
22	Textile mill products	118.8	118.6	119.1	119.1	119.0	118.7	118.7	118.3	117.8	117.8	117.6	117.1	116.8	116.8	116.3
23	Apparel and other finished products made from fabrics and similar materials	123.4	124.8	124.7	124.9	124.9	124.9	124.9	125.1	125.3	125.0	124.9	125.1	125.1	125.0	125.1
24	Lumber and wood products, except furniture	158.9	157.0	158.5	157.4	155.6	157.0	158.2	157.3	155.3	155.2	155.7	156.7	158.3	160.1	160.1
25	Furniture and fixtures	138.2	139.7	139.4	139.7	139.6	139.6	139.7	139.7	140.1	140.0	140.2	140.2	140.6	140.8	140.7
26	Paper and allied products	133.5	136.2	137.0	137.0	136.7	136.7	136.3	135.5	134.6	134.0	133.5	133.5	132.8	133.2	134.0
27	Printing, publishing, and allied industries	169.1	174.0	174.0	173.9	173.6	173.7	173.7	174.3	174.9	175.2	175.2	175.9	176.3	176.5	176.9
28	Chemicals and allied products	147.1	148.7	149.8	149.7	149.5	149.5	149.1	148.5	148.3	148.1	147.9	148.1	148.1	148.1	148.5
29	Petroleum refining and related products	85.6	66.3	67.9	70.2	68.0	67.0	63.6	64.2	65.5	63.3	56.3	58.8	56.1	59.3	73.3
30	Rubber and miscellaneous plastics products	122.8	122.1	122.5	122.3	122.1	121.9	121.9	121.9	121.6	121.7	121.8	121.6	121.2	121.2	121.9
31	Leather and leather products	137.1	137.1	137.1	137.2	137.2	137.3	137.1	137.2	137.1	136.5	136.7	136.1	136.6	136.8	136.2
32	Stone, clay, glass, and concrete products	127.4	129.3	128.7	129.0	129.4	129.9	130.1	130.2	130.4	130.3	130.2	130.5	131.1	131.7	132.1
33	Primary metal industries	124.7	120.9	122.6	122.1	121.6	120.9	120.6	120.1	119.1	118.0	116.9	116.3	115.4	114.9	114.6
34	Fabricated metal products, except machinery and transportation transportation equipment	127.6	128.7	128.6	128.8	128.9	128.8	128.8	128.9	128.7	128.8	128.7	128.9	128.8	128.8	128.9
35	Machinery, except electrical	118.5	117.7	117.8	117.7	117.7	117.7	117.5	117.6	117.4	117.4	117.3	117.4	117.5	117.5	117.5
36	Electrical and electronic machinery, equipment, and supplies	111.6	110.4	110.5	110.4	110.4	110.4	110.3	110.2	110.0	110.1	110.0	109.9	109.8	109.9	109.8
37	Transportation	134.1	133.6	133.8	133.0	132.5	132.7	132.2	131.8	135.4	135.4	134.9	134.7	134.6	134.3	134.2
38	Measuring and controlling instruments; photographic, medical, and optical goods; watches and clocks	125.6	126.0	126.3	126.2	126.2	125.8	125.9	125.9	125.8	126.1	125.9	126.0	126.0	126.4	126.3
39	Miscellaneous manufacturing industries industries (12/85 = 100)	129.0	129.7	129.6	129.7	129.6	129.7	129.8	129.9	129.8	129.7	129.8	130.1	130.1	130.3	130.2
	Service industries:															
42	Motor freight transportation and warehousing (06/93 = 100)	108.9	111.6	110.9	111.3	111.5	111.9	112.1	112.4	112.6	112.5	112.7	113.2	113.4	113.9	114.4
43	U.S. Postal Service (06/89 = 100)	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	135.4	135.4	135.4	135.4
44	Water transportation (12/92 = 100)	104.2	105.6	102.2	105.3	106.1	107.9	108.1	108.9	108.4	107.3	105.7	106.0	105.0	105.9	106.1
45	Transportation by air (12/92 = 100)	125.3	124.5	124.3	124.3	124.2	124.2	124.3	125.2	125.4	126.1	126.5	127.6	128.6	128.5	130.0
46	Pipelines, except natural gas (12/92 = 100)	98.8	99.2	99.3	99.3	99.3	99.2	99.2	99.2	99.2	99.2	99.2	96.9	98.2	98.2	98.5

33. Annual data: Producer Price Indexes, by stage of processing

[1982 = 100]

Index	1990	1991	1992	1993	1994	1995	1996	1997	1998
Finished goods									
Total	119.2	121.7	123.2	124.7	125.5	127.9	131.3	131.8	130.7
Foods	124.4	124.1	123.3	125.7	126.8	129.0	133.6	134.5	134.3
Energy	75.0	78.1	77.8	78.0	77.0	78.1	83.2	83.4	75.1
Other	126.6	131.1	134.2	135.8	137.1	140.0	142.0	142.4	143.7
Intermediate materials, supplies, and components									
Total	114.5	114.4	114.7	116.2	118.5	124.9	125.7	125.6	123.0
Foods	117.9	115.3	113.9	115.6	118.5	119.5	125.3	123.2	123.2
Energy	85.5	85.1	84.3	84.6	83.0	84.1	89.8	89.0	80.8
Other	120.9	121.4	122.0	123.8	127.1	135.2	134.0	134.2	133.5
Crude materials for further processing									
Total	108.9	101.2	100.4	102.4	101.8	102.7	113.8	111.1	96.8
Foods	113.1	105.5	105.1	108.4	106.5	105.8	121.5	112.2	103.9
Energy	85.9	80.4	78.8	76.7	72.1	69.4	85.0	87.3	68.6
Other	107.3	97.5	94.2	94.1	97.0	105.8	105.7	103.5	84.5

34. U.S. export price indexes by Standard International Trade Classification

[1995 = 100, unless otherwise indicated]

SITC Rev. 3	Industry	1998									1999			
		Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
0	**Food and live animals**	90.8	91.3	90.9	92.3	89.6	86.7	87.7	89.1	89.5	90.4	89.2	87.8	88.2
01	Meat and meat preparations	92.2	93.7	97.8	97.9	98.4	96.3	93.8	90.7	89.9	90.2	93.3	90.0	88.6
04	Cereals and cereal preparations	86.2	85.9	82.6	82.3	74.9	70.2	73.4	78.2	78.9	79.3	77.8	75.8	76.7
05	Vegetables, fruit, and nuts, prepared fresh or dry	92.9	96.4	98.4	101.6	102.2	99.2	99.4	99.3	99.7	103.2	97.9	94.9	94.7
2	**Crude materials, inedible, except fuels**	83.2	83.0	82.0	82.0	79.9	77.9	75.5	75.7	76.3	75.6	75.0	74.0	74.1
21	Hides, skins, and furskins, raw	87.9	85.9	84.8	81.8	83.9	83.5	80.9	80.1	85.7	82.7	81.4	81.5	78.9
22	Oilseeds and oleaginous fruits	105.4	106.7	102.6	106.6	95.3	91.8	87.9	93.3	95.6	91.4	84.9	78.3	80.4
24	Cork and wood	84.0	82.6	82.0	82.4	82.4	82.2	82.5	81.5	81.4	81.4	81.5	81.4	82.0
25	Pulp and waste paper	64.2	63.5	64.0	64.5	64.5	62.7	59.1	57.6	57.7	59.7	61.3	62.0	61.6
26	Textile fibers and their waste	76.0	77.4	79.3	78.5	76.9	76.3	73.7	71.4	70.6	70.4	70.8	69.7	69.8
27	Crude fertilizers and crude minerals	97.1	97.0	97.0	97.1	96.9	96.9	95.1	95.1	95.1	93.4	93.4	93.6	93.5
28	Metalliferous ores and metal scrap	80.3	79.8	76.6	73.0	72.6	69.7	67.5	67.8	67.9	67.7	68.8	69.8	68.6
3	**Mineral fuels, lubricants, and related products**	104.8	104.7	103.2	96.3	94.7	93.4	94.5	94.5	93.7	93.3	93.4	93.1	101.4
32	Coal, coke, and briquettes	100.1	100.1	100.1	99.9	99.5	99.4	99.5	99.4	99.4	99.3	99.3	99.3	98.7
33	Petroleum, petroleum products, and related materials	108.7	108.7	106.8	95.2	92.9	90.8	93.8	93.9	92.2	91.4	91.4	90.9	104.8
4	**Animal and vegetable oils, fats, and waxes**	101.4	106.6	107.9	104.4	103.4	102.7	102.8	102.9	99.7	98.0	90.6	82.6	83.4
5	**Chemicals and related products, n.e.s.**	93.5	93.1	92.6	92.2	92.1	91.8	91.2	91.2	91.0	90.6	90.6	90.5	90.5
54	Medicinal and pharmaceutical products	101.6	101.6	101.6	101.6	101.6	101.6	101.0	101.0	100.6	100.1	100.1	100.4	100.6
55	Essential oils; polishing and cleaning preparations	101.2	101.4	101.4	101.4	101.4	102.7	102.8	101.7	101.6	101.3	101.4	101.5	101.5
57	Plastics in primary forms (12/92 = 100)	90.9	90.5	88.9	88.8	87.9	87.6	85.9	85.9	85.6	84.6	84.4	84.4	85.6
58	Plastics in nonprimary forms (12/92 = 100)	99.8	99.1	97.9	97.2	97.6	97.3	97.1	95.9	95.4	95.9	95.4	96.4	96.0
59	Chemical materials and products, n.e.s.	101.8	100.4	100.6	100.4	100.4	100.0	100.5	101.1	101.2	100.4	100.8	100.4	100.2
6	**Manufactured goods classified chiefly by materials**	98.3	98.2	97.9	97.5	97.3	96.8	96.6	96.7	96.4	96.7	96.8	96.3	96.4
62	Rubber manufactures, n.e.s.	101.9	101.6	101.9	102.2	102.7	102.4	104.3	106.1	106.0	106.5	107.6	106.8	105.9
64	Paper, paperboard, and articles of paper, pulp, and paperboard	84.6	84.1	83.8	82.7	82.2	81.3	81.3	81.9	81.3	80.3	80.8	80.9	81.9
66	Nonmetallic mineral manufactures, n.e.s.	107.0	106.9	106.7	106.6	106.8	106.8	107.1	107.2	107.3	106.9	106.9	106.5	106.5
68	Nonferrous metals	91.5	93.6	88.1	87.4	86.7	85.5	85.7	85.4	83.9	84.5	85.4	84.0	83.9
7	**Machinery and transport equipment**	99.1	99.2	98.7	98.4	98.3	98.2	98.3	98.2	98.2	98.1	98.1	98.1	98.2
71	Power generating machinery and equipment	107.0	107.0	107.1	106.8	106.8	107.0	107.0	108.0	108.5	109.1	109.3	109.5	109.6
72	Machinery specialized for particular industries	104.8	105.1	105.2	105.3	105.3	105.5	105.5	105.5	105.2	105.7	105.6	105.8	105.8
74	General industrial machines and parts, n.e.s., and machine parts	105.9	106.2	106.1	106.3	106.5	106.4	106.7	106.5	106.5	107.0	107.4	107.2	107.3
75	Computer equipment and office machines	79.1	79.0	76.5	76.0	75.4	74.8	74.5	74.5	74.4	73.6	73.3	73.0	72.6
76	Telecommunications and sound recording and reproducing apparatus and equipment	98.3	98.7	98.7	98.1	98.2	98.2	98.1	97.5	97.6	97.6	97.4	97.6	97.6
77	Electrical machinery and equipment	92.7	92.6	92.1	91.3	91.1	91.2	91.2	90.8	90.6	89.9	89.9	90.1	90.6
78	Road vehicles	101.9	101.9	101.9	102.0	102.0	102.0	102.2	102.2	102.1	102.1	102.3	102.2	102.2
87	**Professional, scientific, and controlling instruments and apparatus**	103.6	103.8	103.8	103.9	103.8	103.8	103.9	104.0	104.1	104.8	104.8	105.2	105.3

35. U.S. import price indexes by Standard International Trade Classification

[1995 = 100, unless otherwise indicated]

SITC Rev. 3	Industry	1998									1999			
		Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
0	**Food and live animals**	99.4	97.5	98.0	97.4	93.9	95.5	97.0	95.8	95.2	96.3	93.2	93.2	93.8
01	Meat and meat preparations	101.7	101.3	98.3	97.7	97.8	97.2	95.5	94.8	91.8	91.9	92.2	94.0	94.5
03	Fish and crustaceans, mollusks, and other aquatic invertebrates	107.4	107.2	109.4	106.1	103.9	103.7	104.2	102.3	100.1	100.9	102.7	103.3	106.0
05	Vegetables, fruit, and nuts, prepared fresh or dry	100.8	99.0	103.5	111.7	98.1	106.7	114.1	109.6	110.6	112.8	102.1	101.7	102.3
07	Coffee, tea, cocoa, spices, and manufactures thereof	92.9	86.1	82.1	73.6	79.4	77.4	73.9	74.6	75.0	76.2	72.3	71.0	69.5
1	**Beverages and tobacco**	109.2	109.3	109.6	109.8	109.7	109.7	109.9	109.7	109.9	110.4	110.1	110.5	110.6
11	Beverages	105.8	105.9	106.3	106.5	106.3	106.4	106.6	106.4	106.6	106.7	106.7	106.9	107.2
2	**Crude materials, inedible, except fuels**	89.8	89.3	87.7	87.3	85.7	85.7	84.0	83.1	84.1	84.3	87.4	86.3	85.9
23	Crude rubber (including synthetic and reclaimed)	61.3	57.7	58.8	54.9	53.8	53.8	54.8	54.6	51.0	–	–	–	–
24	Cork and wood	110.1	106.6	101.2	105.5	106.6	107.3	102.5	102.8	106.9	108.6	113.7	113.2	113.5
25	Pulp and waste paper	63.7	62.9	66.1	64.6	62.5	60.8	59.1	58.0	57.8	57.2	57.9	57.6	57.3
28	Metalliferous ores and metal scrap	100.7	100.8	98.6	96.0	94.2	92.9	93.2	92.8	92.8	90.9	90.4	89.9	89.5
29	Crude animal and vegetable materials, n.e.s.	102.0	116.0	113.1	113.4	100.9	105.2	103.8	96.9	99.4	103.4	120.7	109.4	108.6
3	**Mineral fuels, lubricants, and related products**	80.5	80.9	77.6	74.3	73.4	77.5	78.9	72.7	64.6	67.5	66.5	71.5	82.3
33	Petroleum, petroleum products, and related materials	76.5	76.9	73.4	69.5	69.3	74.0	75.7	68.1	58.7	61.7	61.3	68.2	80.5
34	Gas, natural and manufactured	113.1	114.3	111.9	112.6	106.8	106.4	105.8	110.0	110.7	113.5	107.3	97.7	98.2
5	**Chemicals and related products, n.e.s.**	93.0	93.6	93.6	92.9	92.1	91.8	91.8	92.3	91.1	91.4	91.1	90.9	90.6
52	Inorganic chemicals	95.5	97.2	97.8	96.1	94.6	93.9	94.5	94.9	90.9	90.1	88.5	88.4	86.6
53	Dying, tanning, and coloring materials	94.7	94.8	94.9	94.6	94.8	94.8	96.0	97.3	96.5	94.7	94.0	94.3	92.6
54	Medicinal and pharmaceutical products	95.5	95.4	95.3	95.0	94.9	94.6	94.7	95.9	95.7	97.0	97.4	96.7	96.4
55	Essential oils; polishing and cleaning preparations	94.1	94.6	94.8	94.3	93.4	93.8	95.0	95.3	95.2	94.6	94.3	93.4	92.8
57	Plastics in primary forms (12/92 = 100)	94.1	94.1	94.0	93.1	91.2	91.6	90.8	91.5	91.3	91.8	92.2	92.3	92.4
58	Plastics in nonprimary forms (12/92 = 100)	80.2	80.0	79.1	77.1	75.5	74.1	74.0	74.1	73.7	73.5	73.0	73.1	73.2
59	Chemical materials and products, n.e.s.	101.3	101.8	101.4	100.4	100.3	100.6	99.2	99.2	99.4	98.8	98.1	97.9	98.5
6	**Manufactured goods classified chiefly by materials**	94.6	94.7	94.0	93.2	93.1	92.7	92.7	92.5	91.7	91.6	91.8	91.8	91.8
62	Rubber manufactures, n.e.s.	94.7	94.7	95.0	94.7	94.2	94.3	94.3	94.7	94.4	94.6	94.7	94.5	94.2
64	Paper, paperboard, and articles of paper, pulp, and paperboard	87.9	87.6	87.5	87.4	86.9	87.0	87.4	87.5	86.1	85.6	85.7	85.5	84.9
66	Nonmetallic mineral manufactures, n.e.s.	100.8	100.7	100.6	100.2	100.4	100.1	100.5	100.7	100.6	100.7	101.0	101.4	101.2
68	Nonferrous metals	91.8	94.2	90.9	88.0	87.9	86.3	85.9	83.8	83.0	82.9	84.4	85.9	85.7
69	Manufactures of metals, n.e.s.	96.9	96.3	96.5	96.2	96.2	96.6	96.8	97.3	96.6	97.1	96.8	95.9	95.9
7	**Machinery and transport equipment**	92.5	92.2	91.8	91.4	91.2	90.9	91.0	91.2	91.2	91.2	91.3	90.9	90.5
72	Machinery specialized for particular industries	97.6	97.6	97.6	97.3	97.1	96.7	97.8	98.7	98.4	98.5	98.8	98.3	98.1
74	General industrial machines and parts, n.e.s., and machine parts	96.3	96.4	96.7	96.3	96.5	96.6	97.8	98.7	98.4	98.6	99.1	98.4	97.9
75	Computer equipment and office machines	71.9	70.9	70.4	69.8	69.3	68.7	67.2	66.6	66.7	66.6	65.9	64.4	63.1
76	Telecommunications and sound recording and reproducing apparatus and equipment	90.7	90.6	89.4	88.9	89.0	88.9	88.4	88.5	88.3	88.3	88.5	88.4	87.9
77	Electrical machinery and equipment	85.5	85.4	84.5	83.8	83.8	83.2	83.8	84.0	84.1	83.7	84.1	83.8	83.3
78	Road vehicles	101.5	101.2	101.1	101.0	100.8	100.7	101.0	101.4	101.5	101.9	102.0	101.9	102.0
85	Footwear	100.6	100.6	100.7	100.8	100.9	100.9	101.3	101.1	100.9	101.3	101.4	101.1	101.2
88	Photographic apparatus, equipment, and supplies, and optical goods, n.e.s.	91.6	91.2	91.0	90.9	90.6	90.1	90.7	91.3	91.1	91.9	92.1	91.8	91.4

– Data not avaliable.

36. U.S. export price indexes by end-use category

[1995 = 100]

Category	1998									1999			
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
ALL COMMODITIES	96.5	96.6	96.1	95.8	95.3	94.8	94.7	94.9	94.8	94.8	94.6	94.3	94.5
Foods, feeds, and beverages	92.9	93.8	93.2	94.4	90.9	88.1	88.6	90.6	91.2	91.5	89.4	87.3	88.1
Agricultural foods, feeds, and beverages	93.7	94.7	94.1	94.8	90.5	87.6	88.0	90.3	91.0	91.1	88.7	85.9	86.4
Nonagricultural (fish, beverages) food products	85.7	85.6	84.7	91.5	97.0	94.9	96.1	95.8	94.9	97.5	98.7	103.5	108.6
Industrial supplies and materials	91.0	90.9	90.4	89.3	88.9	88.0	87.4	87.4	87.1	86.8	86.8	86.5	86.9
Agricultural industrial supplies and materials	87.0	87.5	90.3	88.9	87.6	86.0	84.6	82.9	82.7	82.4	81.9	79.8	79.6
Fuels and lubricants	102.2	102.2	100.8	95.7	94.0	92.9	94.2	93.9	92.8	92.8	92.7	92.8	99.4
Nonagricultural supplies and materials, excluding fuel and building materials	89.5	89.4	88.7	87.9	87.7	86.8	86.1	86.2	86.0	85.7	85.7	85.4	85.2
Selected building materials	87.5	86.6	86.0	86.2	87.0	86.8	86.8	86.5	86.1	86.3	86.8	87.3	87.7
Capital goods	98.3	98.2	97.7	97.4	97.2	97.2	97.2	97.0	97.1	97.1	97.1	97.1	97.3
Electric and electrical generating equipment	100.8	100.8	100.5	100.5	100.2	100.1	100.0	99.7	99.5	99.1	99.1	99.1	99.1
Nonelectrical machinery	95.2	95.2	94.5	94.1	93.9	93.9	93.9	93.7	93.7	93.6	93.6	93.7	93.9
Automotive vehicles, parts, and engines	102.3	102.3	102.3	102.4	102.4	102.4	102.8	102.9	102.8	102.9	103.1	103.0	102.9
Consumer goods, excluding automotive	102.2	102.3	101.9	101.9	101.9	102.0	102.1	102.1	101.8	101.9	101.9	101.8	101.6
Nondurables, manufactured	102.1	102.2	102.0	102.0	101.8	102.0	102.2	102.2	101.8	102.1	102.3	102.1	101.6
Durables, manufactured	101.1	101.3	100.7	100.5	100.9	100.9	100.9	100.8	100.7	100.6	100.3	100.3	100.5
Agricultural commodities	92.2	93.1	93.1	93.4	89.6	87.0	87.1	88.6	89.2	89.2	87.1	84.5	84.8
Nonagricultural commodities	97.0	96.9	96.4	96.0	95.9	95.7	95.6	95.6	95.4	95.4	95.5	95.4	95.7

37. U.S. import price indexes by end-use category

[1995 = 100]

Category	1998									1999			
	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
ALL COMMODITIES	93.3	93.2	92.6	91.8	91.4	91.6	91.8	91.3	90.4	90.8	90.7	90.8	91.5
Foods, feeds, and beverages	97.4	96.4	97.1	96.3	94.0	95.4	96.4	95.1	95.1	95.9	93.3	93.0	93.7
Agricultural foods, feeds, and beverages	94.3	92.7	92.8	92.6	89.8	91.7	93.0	91.8	92.3	93.3	89.2	88.7	88.8
Nonagricultural (fish, beverages) food products	105.5	105.8	108.3	105.9	104.9	104.8	105.2	103.8	102.1	102.6	103.8	104.4	106.5
Industrial supplies and materials	89.7	89.9	88.2	86.4	85.8	86.8	87.0	84.9	81.8	82.6	82.5	84.3	87.7
Fuels and lubricants	81.2	81.7	78.5	75.1	74.2	78.2	79.7	73.5	65.5	68.1	67.2	72.2	82.9
Petroleum and petroleum products	77.2	77.6	74.2	70.2	69.8	74.3	76.0	68.6	59.5	62.0	61.7	68.3	80.4
Paper and paper base stocks	81.4	80.9	81.7	81.2	80.2	80.0	80.2	80.0	78.8	78.3	78.6	78.2	77.4
Materials associated with nondurable supplies and materials	91.3	91.3	91.1	89.8	88.8	88.5	88.6	89.1	87.9	87.5	87.2	87.6	87.3
Selected building materials	104.3	102.5	99.7	102.8	104.2	104.4	101.0	101.6	102.8	104.2	107.8	108.0	108.4
Unfinished metals associated with durable goods	94.1	95.4	92.9	90.6	90.1	88.9	88.6	87.4	86.8	86.6	86.6	86.9	87.0
Nonmetals associated with durable goods	91.6	91.3	91.5	90.2	89.7	88.9	88.5	88.6	88.5	88.8	88.6	88.2	87.2
Capital goods	86.5	86.2	85.6	85.0	84.9	84.5	84.5	84.5	84.5	84.5	84.5	83.8	83.0
Electric and electrical generating equipment	95.0	94.7	94.8	94.1	94.1	92.6	92.9	93.5	93.7	93.5	93.6	92.7	92.4
Nonelectrical machinery	83.7	83.4	82.7	82.0	81.9	81.6	81.5	81.5	81.5	81.5	81.5	80.7	79.9
Automotive vehicles, parts, and engines	101.3	101.1	101.0	100.9	100.7	100.6	100.8	101.2	101.3	101.4	101.5	101.4	101.5
Consumer goods, excluding automotive	98.3	98.3	98.2	98.1	97.9	97.8	98.1	98.3	97.9	98.1	98.4	98.0	97.7
Nondurables, manufactured	100.7	100.7	100.9	100.8	100.8	100.8	101.1	101.2	100.8	101.0	101.2	100.9	100.7
Durables, manufactured	95.9	95.8	95.3	95.1	94.9	94.7	95.0	95.3	95.0	95.2	95.2	94.8	94.5
Nonmanufactured consumer goods	97.5	99.3	98.7	98.7	97.1	97.6	97.7	96.7	97.1	97.7	100.9	99.0	98.9

38. U.S. international price indexes for selected categories of services

[1990 = 100, unless otherwise indicated]

Category	1997			1998				1999
	June	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.
Air freight (inbound) (9/90 = 100)	89.9	88.5	86.5	82.9	83.4	81.8	87.4	88.0
Air freight (outbound) (9/92 = 100)	99.2	99.6	97.7	97.2	96.0	95.8	95.2	92.7
Air passenger fares (U.S. carriers)	112.1	109.2	99.5	99.3	107.8	107.3	103.1	104.5
Air passenger fares (foreign carriers)	106.1	104.6	99.7	97.6	102.4	104.0	101.1	98.9
Ocean liner freight (inbound)	96.8	94.9	92.9	93.0	103.2	105.0	104.2	104.1

39. Indexes of productivity, hourly compensation, and unit costs, quarterly data seasonally adjusted

[1992 = 100]

Item	Quarterly indexes												
	1996				1997				1998				1999
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I
Business													
Output per hour of all persons	103.0	103.8	103.8	104.2	104.4	104.8	105.8	106.0	107.1	107.1	107.8	109.0	110.3
Compensation per hour	108.9	110.4	111.4	112.3	113.2	113.9	115.0	116.5	117.9	119.1	120.2	121.5	123.1
Real compensation per hour	98.5	98.9	99.3	99.2	99.5	99.8	100.3	101.1	102.1	102.7	103.2	103.9	104.8
Unit labor costs	105.7	106.3	107.3	107.8	108.5	108.7	108.8	109.9	110.2	111.2	111.5	111.5	111.6
Unit nonlabor payments	111.9	112.1	111.5	111.8	112.4	113.2	113.8	112.4	112.2	110.5	110.4	110.7	111.0
Implicit price deflator	107.9	108.4	108.8	109.2	109.9	110.3	110.6	110.8	110.9	111.0	111.1	111.2	111.4
Nonfarm business													
Output per hour of all persons	103.1	103.8	103.8	104.0	104.1	104.5	105.4	105.6	106.6	106.6	107.3	108.5	109.5
Compensation per hour	108.7	110.1	111.0	111.9	112.9	113.6	114.6	116.0	117.4	118.5	119.7	120.9	122.1
Real compensation per hour	98.3	98.7	99.0	98.9	99.2	99.5	99.9	100.7	101.6	102.1	102.7	103.3	104.0
Unit labor costs	105.4	106.0	107.0	107.5	108.5	108.7	108.8	109.8	110.1	111.1	111.5	111.4	111.5
Unit nonlabor payments	112.3	112.3	111.6	112.2	112.9	113.7	114.6	113.3	113.2	111.6	111.4	111.7	112.4
Implicit price deflator	107.9	108.2	108.6	109.2	110.0	110.4	110.8	111.1	111.2	111.3	111.5	111.5	111.8
Nonfinancial corporations													
Output per hour of all employees	106.4	107.3	108.0	108.6	108.9	109.6	111.1	111.3	112.1	112.9	114.1	115.1	–
Compensation per hour	107.7	109.0	110.1	110.8	111.8	112.5	113.6	115.0	116.0	117.3	118.5	119.7	–
Real compensation per hour	97.4	97.7	98.1	98.0	98.2	98.5	99.0	99.8	100.4	101.1	101.7	102.3	–
Total unit costs	100.6	100.7	100.8	100.9	101.2	101.2	100.7	101.3	101.4	101.7	101.6	102.0	–
Unit labor costs	101.2	101.7	101.9	102.1	102.6	102.6	102.3	103.3	103.5	103.9	103.8	104.1	–
Unit nonlabor costs	98.7	97.9	97.5	97.4	97.3	97.1	96.4	95.7	95.4	95.5	95.2	96.2	–
Unit profits	153.7	154.1	155.3	155.4	156.6	157.3	161.7	155.7	153.5	150.4	151.8	146.6	–
Unit nonlabor payments	113.9	113.5	113.5	113.5	113.7	113.8	114.5	112.3	111.5	110.7	110.9	110.1	–
Implicit price deflator	105.4	105.5	105.7	105.8	106.2	106.3	106.3	106.3	106.2	106.1	106.1	106.0	–
Manufacturing													
Output per hour of all persons	111.9	113.2	114.7	115.5	116.7	118.1	120.7	121.9	122.4	123.6	125.0	126.7	128.5
Compensation per hour	109.2	110.3	111.2	111.9	113.1	114.2	115.7	118.0	119.2	119.9	120.9	121.8	123.3
Real compensation per hour	98.8	98.9	99.1	98.9	99.4	100.0	100.9	102.4	103.2	103.3	103.7	104.1	105.0
Unit labor costs	97.6	97.5	97.0	96.9	97.0	96.7	95.9	96.8	97.3	97.0	96.7	96.2	96.0

– Data not available.

40. Annual indexes of multifactor productivity and related measures, selected years

[1992 = 100]

Item	1960	1970	1980	1989	1990	1991	1993	1994	1995	1996	1997
Private business											
Productivity:											
Output per hour of all persons	50.8	70.1	83.8	95.5	96.1	96.7	100.1	100.6	101.0	103.7	105.2
Output per unit of capital services	117.3	117.1	107.3	103.8	102.1	98.6	100.7	102.3	101.9	102.3	102.6
Multifactor productivity	70.7	86.5	95.3	100.0	99.6	98.1	100.1	100.6	100.7	102.4	103.1
Output	34.0	51.6	72.6	97.8	98.6	96.9	102.7	107.0	110.0	114.7	120.1
Inputs:											
Labor input	60.6	68.3	80.5	99.6	100.2	99.0	102.9	107.1	109.8	112.0	116.2
Capital services	29.0	44.1	67.7	94.2	96.5	98.3	102.0	104.6	108.0	112.2	117.1
Combined units of labor and capital input	48.1	59.7	76.2	97.8	99.0	98.7	102.6	106.3	109.3	112.1	116.5
Capital per hour of all persons	43.3	59.9	78.1	92.0	94.1	98.1	99.4	98.3	99.2	101.4	102.6
Private nonfarm business											
Productivity:											
Output per hour of all persons	54.3	72.2	85.6	95.9	96.3	96.9	100.1	100.6	101.2	103.7	104.9
Output per unit of capital services	126.1	124.1	111.4	104.6	102.6	98.8	100.8	102.1	101.8	102.1	102.1
Multifactor productivity	74.9	89.4	97.6	100.5	99.8	98.4	100.1	100.5	100.8	102.3	102.7
Output	33.7	51.8	73.1	98.1	98.8	97.0	103.0	107.1	110.4	115.0	120.2
Inputs:											
Labor input	56.4	66.6	79.3	99.5	100.2	98.8	103.1	107.2	109.9	112.3	116.6
Capital services	26.7	41.8	65.6	93.9	96.3	98.2	102.2	104.8	108.4	112.6	117.7
Combined units of labor and capital input	45.0	58.0	74.9	97.7	99.0	98.6	102.9	106.5	109.5	112.4	117.0
Capital per hour of all persons	43.0	58.2	76.8	91.7	93.8	98.1	99.3	98.5	99.4	101.6	102.8
Manufacturing											
Productivity:											
Output per hour of all persons	42.1	54.5	70.4	90.7	93.0	95.1	102.2	105.3	109.4	113.8	–
Output per unit of capital services	125.6	116.3	101.5	103.5	101.3	97.3	101.8	105.2	106.8	107.0	–
Multifactor productivity	72.9	84.2	87.3	100.4	99.8	98.6	101.2	104.4	108.4	110.7	–
Output	38.7	56.8	75.7	97.1	97.5	95.5	103.6	109.1	113.8	118.0	–
Inputs:											
Hours of all persons	92.0	104.2	107.5	107.1	104.8	100.4	101.4	103.6	104.0	103.7	–
Capital services	30.9	48.8	74.6	93.8	96.3	98.2	101.7	103.6	106.6	110.3	–
Energy	51.5	85.4	92.5	96.8	99.9	100.1	103.7	107.3	109.5	107.0	–
Nonenergy materials	39.1	46.0	74.5	88.3	91.3	93.1	103.0	104.4	101.4	105.4	–
Purchased business services	27.3	47.4	71.9	88.9	91.8	91.9	104.3	107.8	111.0	111.6	–
Combined units of all factor inputs	53.1	67.4	86.7	96.7	97.7	96.9	102.3	104.5	105.0	106.6	–

– Data not available.

41. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years

[1992 = 100]

Item	1960	1970	1980	1988	1989	1990	1991	1993	1994	1995	1996	1997	1998
Business													
Output per hour of all persons	51.4	70.6	84.2	94.7	95.5	96.1	96.7	100.1	100.7	101.0	103.7	105.2	107.7
Compensation per hour	13.7	23.6	54.5	83.6	85.9	90.8	95.1	102.5	104.4	106.8	110.7	114.7	119.7
Real compensation per hour	64.7	85.4	92.8	99.1	97.2	97.4	98.0	99.5	98.8	98.4	99.0	100.3	103.0
Unit labor costs	26.6	33.5	64.7	88.3	90.0	94.4	98.3	102.4	103.7	105.8	106.8	109.0	111.1
Unit nonlabor payments	24.6	30.6	59.6	84.1	91.3	93.5	96.6	102.7	106.8	108.8	111.8	112.9	110.9
Implicit price deflator	25.8	32.4	62.8	86.8	90.4	94.1	97.7	102.5	104.8	106.9	108.6	110.4	111.0
Nonfarm business													
Output per hour of all persons	54.8	72.7	86.0	95.3	95.8	96.3	97.0	100.1	100.6	101.2	103.7	104.9	107.2
Compensation per hour	14.3	23.8	54.8	83.7	86.0	90.7	95.1	102.2	104.2	106.7	110.4	114.3	119.1
Real compensation per hour	67.8	86.1	93.4	99.3	97.3	97.3	98.0	99.3	98.7	98.2	98.7	99.9	102.5
Unit labor costs	26.1	32.8	63.8	87.8	89.7	94.2	98.1	102.2	103.6	105.4	106.5	108.9	111.1
Unit nonlabor payments	24.0	30.3	58.6	83.8	90.7	93.1	96.8	103.1	107.3	109.9	112.1	113.6	112.0
Implicit price deflator	25.3	31.9	61.9	86.4	90.0	93.8	97.6	102.5	104.9	107.0	108.5	110.6	111.4
Nonfinancial corporations													
Output per hour of all employees	54.5	69.1	80.4	96.9	95.5	96.1	97.6	101.1	103.5	104.7	107.6	110.3	113.6
Compensation per hour	15.6	25.4	56.7	84.9	87.1	91.5	95.7	102.0	104.1	106.2	109.5	113.3	118.0
Real compensation per hour	73.9	91.7	96.5	100.7	98.5	98.2	98.5	99.1	98.5	97.8	97.9	99.0	101.6
Total unit costs	27.8	36.1	70.2	88.2	92.5	96.2	99.3	100.5	100.3	100.8	100.7	101.1	101.7
Unit labor costs	28.6	36.7	70.5	87.7	91.1	95.2	98.0	100.9	100.6	101.4	101.7	102.7	103.8
Unit nonlabor costs	25.3	34.3	69.2	89.7	96.3	99.1	103.0	99.4	99.7	99.0	97.9	96.6	95.6
Unit profits	47.7	42.0	64.4	103.8	96.0	94.6	93.9	113.3	134.5	143.6	154.6	157.8	150.5
Unit nonlabor payments	31.5	36.4	67.9	93.6	96.2	97.9	100.5	103.2	109.4	111.4	113.6	113.6	110.8
Implicit price deflator	29.6	36.6	69.7	89.6	92.8	96.1	98.8	101.7	103.4	104.7	105.6	106.3	106.1
Manufacturing													
Output per hour of all persons	42.1	54.4	70.4	90.5	90.7	93.0	95.1	102.2	105.3	109.4	113.8	119.4	124.4
Compensation per hour	14.9	23.8	55.8	84.2	86.9	91.0	95.8	102.9	105.8	108.3	110.7	115.3	120.4
Real compensation per hour	70.7	86.2	95.0	99.9	98.3	97.7	98.7	99.9	100.1	99.7	99.0	100.8	103.7
Unit labor costs	35.5	43.8	79.3	93.0	95.8	97.9	100.7	100.7	100.5	99.0	97.2	96.6	96.8
Unit nonlabor payments	26.7	29.3	79.7	90.3	95.1	99.4	98.8	101.0	102.8	106.9	109.5	–	–
Implicit price deflator	30.1	34.9	79.5	91.4	95.3	98.8	99.5	100.9	101.9	103.9	104.7	–	–

– Data not available.

42. Annual indexes of output per hour for selected 3-digit SIC industries

[1987 = 100]

Industry	SIC	1988	1989	1990	1991	1992	1993	1994	1995	1996
Copper ores	102	109.2	106.6	102.7	100.5	115.2	118.1	126.0	117.2	115.8
Gold and silver ores	104	101.5	113.3	122.3	127.4	141.6	159.8	160.8	144.2	134.8
Bituminous coal and lignite mining	122	111.7	117.3	118.7	122.4	133.0	141.2	148.1	155.9	170.4
Crude petroleum and natural gas	131	101.0	98.0	97.0	97.9	102.1	105.9	112.4	119.4	126.5
Crushed and broken stone	142	101.3	98.7	102.2	99.8	105.0	103.6	108.7	105.3	107.8
Meat products	201	100.1	99.3	97.1	99.7	104.6	104.3	101.2	102.4	97.7
Dairy products	202	108.4	107.8	107.3	108.4	111.5	109.7	111.9	116.6	115.9
Preserved fruits and vegetables	203	97.0	97.8	95.6	99.2	100.6	106.8	107.6	109.1	109.4
Grain mill products	204	101.3	107.6	105.3	104.9	107.7	109.1	108.4	115.3	107.7
Bakery products	205	96.8	96.1	92.7	90.6	93.8	94.4	96.4	97.3	95.4
Sugar and confectionery products	206	99.4	101.5	102.8	101.3	99.1	103.9	105.4	107.5	112.7
Fats and oils	207	108.9	116.4	118.1	120.1	114.1	112.6	111.8	120.3	111.1
Beverages	208	106.0	112.7	117.7	120.5	127.6	127.0	130.9	134.3	135.7
Miscellaneous food and kindred products	209	107.0	99.3	99.3	101.6	101.6	105.3	101.0	103.1	107.6
Cigarettes	211	101.2	109.0	113.2	107.6	111.6	106.5	126.6	142.9	147.7
Broadwoven fabric mills, cotton	221	99.6	99.8	103.1	111.2	110.3	117.8	122.1	134.0	137.8
Broadwoven fabric mills, manmade	222	99.2	106.3	111.3	116.2	126.2	131.7	142.5	145.2	151.1
Narrow fabric mills	224	108.4	92.7	96.5	99.6	112.9	111.4	120.1	118.9	127.5
Knitting mills	225	96.3	108.0	107.5	114.1	119.5	128.1	134.3	138.6	150.8
Textile finishing, except wool	226	90.3	88.7	83.4	79.9	78.6	79.3	81.2	78.5	79.8
Carpets and rugs	227	98.6	97.8	93.2	89.2	96.1	97.1	93.3	95.8	101.2
Yarn and thread mills	228	102.1	104.2	110.2	111.4	119.6	126.6	130.7	137.4	146.6
Miscellaneous textile goods	229	101.6	109.1	109.2	104.6	106.5	110.4	118.5	123.7	125.4
Men's and boys' suits and coats	231	105.1	97.7	93.9	90.2	89.0	97.4	97.7	92.5	96.5
Men's and boys' furnishings	232	100.1	100.1	102.1	108.4	109.1	108.4	111.7	123.4	134.0
Women's and misses' outerwear	233	101.4	96.8	104.1	104.3	109.4	121.8	127.4	135.5	144.2
Women's and children's undergarments	234	105.4	94.6	102.1	113.6	117.4	124.5	138.0	161.3	171.6
Hats, caps, and millinery	235	99.0	96.4	89.2	91.1	93.6	87.2	77.7	84.3	80.9
Miscellaneous apparel and accessories	238	101.3	88.4	90.6	91.8	91.3	94.0	105.5	116.8	121.3
Miscellaneous fabricated textile products	239	96.6	95.7	99.9	100.7	107.5	108.5	107.8	109.2	106.3
Logging	241	93.7	89.4	86.3	86.0	96.2	88.6	87.8	86.0	86.0
Sawmills and planing mills	242	100.7	99.6	99.8	102.6	108.1	101.9	103.3	110.2	114.9
Millwork, plywood, and structural members	243	98.9	97.1	98.0	98.0	99.9	97.0	94.5	92.7	92.2
Wood containers	244	103.1	108.8	111.2	113.1	109.4	100.1	100.9	106.1	106.5
Wood buildings and mobile homes	245	97.8	98.8	103.1	103.0	103.1	103.8	98.3	97.0	97.0
Miscellaneous wood products	249	95.9	102.4	107.7	110.5	114.2	115.3	111.8	115.4	114.2
Household furniture	251	99.4	102.0	104.5	107.1	110.5	110.6	112.5	116.9	122.2
Office furniture	252	94.3	97.5	95.0	94.1	102.5	103.2	100.5	101.1	106.8
Public building and related furniture	253	109.6	113.7	119.8	120.2	140.6	161.0	157.4	173.3	179.9
Partitions and fixtures	254	95.7	92.4	95.6	93.0	102.7	107.4	98.9	101.2	97.3
Miscellaneous furniture and fixtures	259	103.6	101.9	103.5	102.1	99.5	103.6	104.7	110.0	113.6
Pulp mills	261	99.6	107.4	116.7	128.3	137.3	122.5	128.9	131.9	132.7
Paper mills	262	103.9	103.6	102.3	99.2	103.3	102.4	110.2	119.0	111.9
Paperboard mills	263	105.5	101.9	100.6	101.4	104.4	108.4	114.9	119.5	118.7
Paperboard containers and boxes	265	99.7	101.5	101.3	103.4	105.2	107.9	108.4	105.1	106.5
Miscellaneous converted paper products	267	101.1	101.6	101.4	105.4	105.5	108.0	110.8	113.4	114.6
Newspapers	271	96.9	95.2	90.6	85.8	81.5	79.4	79.9	79.0	77.1
Periodicals	272	97.9	98.3	93.9	89.5	92.9	89.6	82.4	88.5	90.9
Books	273	99.1	94.1	96.6	100.8	97.7	103.5	103.0	101.5	100.5
Miscellaneous publishing	274	96.7	89.0	92.2	95.9	105.8	104.5	97.5	94.8	93.4
Commercial printing	275	100.0	101.1	102.5	102.0	108.0	106.9	106.5	107.2	108.7
Manifold business forms	276	98.7	89.7	93.0	89.1	94.5	91.1	82.0	76.9	74.5
Greeting cards	277	100.1	109.1	100.6	92.7	96.7	91.4	89.0	92.5	91.8
Blankbooks and bookbinding	278	95.6	94.2	99.4	96.1	103.6	98.7	105.4	108.7	115.0
Printing trade services	279	99.9	94.3	99.3	100.6	112.0	115.3	111.0	116.7	126.7
Industrial inorganic chemicals	281	105.7	104.2	106.7	109.6	109.6	105.4	102.0	109.2	110.4
Plastics materials and synthetics	282	98.8	99.7	100.9	100.0	107.5	111.9	125.0	128.7	125.1
Drugs	283	101.1	102.9	103.9	104.7	99.6	100.0	105.5	108.9	112.9
Soaps, cleaners, and toilet goods	284	102.0	100.7	103.8	105.3	104.4	108.7	111.2	118.6	121.4
Paints and allied products	285	101.4	103.3	106.3	104.3	102.9	108.8	116.7	118.0	124.2
Industrial organic chemicals	286	109.8	110.3	101.4	95.8	94.5	92.2	100.0	98.8	98.4
Agricultural chemicals	287	103.8	104.5	105.0	99.9	99.9	104.3	105.7	109.0	111.4
Miscellaneous chemical products	289	95.4	95.2	97.3	96.1	101.8	107.1	105.7	107.8	110.2
Petroleum refining	291	105.3	109.6	109.2	106.6	111.3	120.1	123.8	132.3	142.0
Asphalt paving and roofing materials	295	98.3	95.3	98.0	94.1	100.4	108.0	104.9	111.2	114.4
Miscellaneous petroleum and coal products	299	98.4	101.9	94.8	90.6	101.5	104.2	96.3	87.4	86.4
Tires and inner tubes	301	102.9	103.8	103.0	102.4	107.8	116.5	124.1	131.1	138.8
Hose and belting and gaskets and packing	305	103.7	96.3	96.1	92.4	97.8	99.7	102.7	104.6	107.2
Fabricated rubber products, n.e.c.	306	104.3	105.5	109.2	110.1	115.3	123.2	119.2	121.6	120.3
Miscellaneous plastics products, n.e.c.	308	100.5	101.7	105.6	108.1	114.1	116.4	120.4	120.7	124.9

See footnotes at end of table.

42. Continued—Annual indexes of output per hour for selected 3-digit SIC industries

[1987 = 100]

Industry	SIC	1988	1989	1990	1991	1992	1993	1994	1995	1996
Footwear, except rubber	314	101.3	101.1	101.1	94.4	104.2	105.2	113.0	117.1	125.8
Luggage	316	93.7	104.8	106.2	100.3	90.7	89.5	92.3	90.5	108.5
Handbags and personal leather goods	317	98.5	93.1	96.5	98.7	111.2	97.8	86.8	81.8	83.9
Flat glass	321	91.9	90.7	84.5	83.6	92.7	97.7	97.6	99.6	104.2
Glass and glassware, pressed or blown	322	100.6	100.2	104.8	102.3	108.9	108.7	112.9	115.7	121.9
Products of purchased glass	323	95.9	90.1	92.6	97.7	101.5	106.2	105.9	106.1	124.5
Cement, hydraulic	324	103.2	110.2	112.4	108.3	115.1	119.9	125.6	124.3	127.9
Structural clay products	325	98.8	103.1	109.6	109.8	111.5	105.8	113.0	111.6	119.5
Pottery and related products	326	99.6	97.1	98.6	95.8	99.5	100.3	108.4	109.3	119.4
Concrete, gypsum, and plaster products	327	100.8	102.4	102.3	101.2	102.5	104.6	101.5	104.5	107.5
Miscellaneous nonmetallic mineral products	329	103.0	95.5	95.4	94.0	104.3	104.5	106.3	107.8	111.3
Blast furnace and basic steel products	331	112.6	108.0	109.6	107.8	117.1	133.5	142.4	142.7	153.6
Iron and steel foundries	332	104.0	105.4	106.1	104.5	107.2	112.1	113.0	112.7	115.7
Primary nonferrous metals	333	107.8	106.1	102.3	110.9	102.0	108.0	105.4	111.1	111.0
Nonferrous rolling and drawing	335	95.5	93.6	92.7	90.9	95.8	98.2	101.1	99.1	103.9
Nonferrous foundries (castings)	336	102.6	105.1	104.0	103.6	103.6	108.5	112.1	117.8	122.6
Miscellaneous primary metal products	339	106.6	105.0	113.7	109.1	114.5	111.3	134.5	152.2	149.6
Metal cans and shipping containers	341	106.5	108.5	117.6	122.9	127.8	132.3	140.9	144.2	155.2
Cutlery, handtools, and hardware	342	97.8	101.7	97.3	96.8	100.1	104.0	109.2	111.3	117.9
Plumbing and heating, except electric	343	103.7	101.5	102.6	102.0	98.4	102.0	109.1	109.2	118.6
Fabricated structural metal products	344	100.4	96.9	98.8	100.0	103.9	104.8	107.7	105.8	106.7
Screw machine products, bolts, etc	345	98.5	96.1	96.1	97.9	102.3	104.4	107.2	109.7	110.4
Metal forgings and stampings	346	101.5	99.8	95.6	92.9	103.7	108.7	108.5	109.3	113.7
Metal services, n.e.c	347	108.3	102.4	104.7	99.4	111.6	120.6	123.0	127.7	127.5
Ordnance and accessories, n.e.c	348	97.7	89.8	82.1	81.5	88.6	84.6	83.6	87.6	87.4
Miscellaneous fabricated metal products	349	101.4	95.9	97.5	97.3	100.9	101.8	103.0	106.4	108.6
Engines and turbines	351	106.8	110.7	106.5	105.8	103.3	109.2	122.3	122.7	136.9
Farm and garden machinery	352	106.3	110.7	116.5	112.9	113.9	118.6	125.0	134.7	136.6
Construction and related machinery	353	106.5	108.3	107.0	99.1	102.0	108.2	117.7	122.1	123.8
Metalworking machinery	354	101.0	103.5	101.1	96.4	104.3	107.4	109.9	114.8	114.7
Special industry machinery	355	104.6	108.3	107.5	108.3	106.0	113.6	121.2	132.3	134.7
General industrial machinery	356	106.0	101.6	101.5	101.6	101.6	104.8	106.7	109.0	110.0
Refrigeration and service machinery	358	102.1	106.0	103.6	100.7	104.9	108.6	110.7	112.7	114.4
Industrial machinery, n.e.c	359	106.5	107.1	107.3	109.0	116.9	118.4	127.3	138.8	142.1
Electric distribution equipment	361	105.4	105.0	106.3	106.5	119.6	122.2	131.8	143.0	145.1
Electrical industrial apparatus	362	104.5	107.3	107.5	106.8	116.8	132.5	134.5	150.4	154.1
Household appliances	363	103.0	104.7	105.8	106.5	115.0	123.4	131.4	127.3	126.7
Electric lighting and wiring equipment	364	101.9	100.2	99.9	97.5	105.7	107.8	113.4	113.7	117.4
Communications equipment	366	110.4	107.0	120.9	123.8	145.4	149.0	164.8	169.6	189.6
Miscellaneous electrical equipment & supplies	369	102.8	99.6	90.6	98.6	101.3	108.2	110.5	114.1	123.0
Motor vehicles and equipment	371	103.2	103.3	102.4	96.6	104.2	105.3	107.1	104.1	104.1
Aircraft and parts	372	100.5	98.2	98.8	108.1	112.2	115.1	109.5	107.8	112.6
Ship and boat building and repairing	373	99.4	97.6	103.7	96.3	102.7	106.2	103.8	97.9	100.5
Railroad equipment	374	113.5	135.3	141.1	146.9	147.9	151.0	152.5	150.0	146.3
Motorcycles, bicycles, and parts	375	92.6	94.6	93.8	99.8	108.4	130.9	125.1	120.3	123.3
Guided missiles, space vehicles, parts	376	104.8	110.5	115.7	109.8	109.3	120.9	117.5	118.7	127.3
Search and navigation equipment	381	104.8	105.8	112.7	118.9	122.1	129.1	132.1	149.5	141.8
Measuring and controlling devices	382	103.1	101.3	106.1	112.9	119.9	124.0	133.8	146.4	150.4
Medical instruments and supplies	384	104.4	107.2	116.3	118.4	123.3	126.9	126.1	130.9	140.4
Ophthalmic goods	385	112.6	123.3	121.2	125.1	144.5	157.8	160.6	167.2	188.9
Photographic equipment & supplies	386	105.6	113.0	107.8	110.2	116.4	126.9	132.7	129.5	129.0
Jewelry, silverware, and plated ware	391	100.1	102.9	99.3	95.8	96.7	96.7	99.5	100.2	103.2
Musical instruments	393	101.8	96.1	97.1	96.9	96.0	95.6	88.7	86.9	78.9
Toys and sporting goods	394	104.8	106.0	108.1	109.7	104.9	114.2	109.7	113.6	120.0
Pens, pencils, office, and art supplies	395	108.6	113.3	118.7	117.3	111.7	112.0	130.2	135.4	144.4
Costume jewelry and notions	396	102.0	93.8	105.3	106.7	110.8	115.8	129.0	143.7	142.3
Miscellaneous manufactures	399	104.5	102.8	107.9	109.9	109.6	107.8	106.2	108.2	113.5
U.S. postal service	431	99.9	99.7	104.0	103.7	104.5	107.1	106.6	106.5	104.7
Air transportation	4512,13,22 (pts.)	99.5	95.8	92.9	92.5	96.9	100.2	105.7	108.6	111.0
Telephone communications	481	106.2	111.6	113.3	119.8	127.7	135.5	142.2	148.1	162.2
Radio and television broadcasting	483	103.1	106.2	104.9	106.1	108.3	106.7	110.1	109.6	105.0
Cable and other pay TV services	484	102.0	99.7	92.5	87.5	88.3	85.1	83.3	84.3	81.1
Electric utilities	491,3 (pt.)	104.9	107.7	110.1	113.4	115.2	120.6	126.8	135.0	146.2
Gas utilities	492,3 (pt.)	105.5	103.5	94.8	94.0	95.3	107.0	102.2	107.5	114.6
Lumber and other building materials dealers	521	101.0	99.1	103.6	101.3	105.4	109.1	115.4	113.4	115.7
Paint, glass, and wallpaper stores	523	102.8	101.7	106.0	99.4	106.5	108.4	116.7	115.0	120.1
Hardware stores	525	108.6	115.2	110.5	102.5	107.2	106.6	114.3	111.0	119.2
Retail nurseries, lawn and garden supply stores	526	106.7	103.4	83.9	88.5	100.4	102.4	108.1	104.9	118.5
Department stores	531	99.2	97.0	94.2	98.2	100.9	105.0	107.1	108.5	112.7
Variety stores	533	101.9	124.4	151.2	154.2	167.7	169.9	159.7	157.3	175.0

See footnotes at end of table.

42. Continued—Annual indexes of output per hour for selected 3-digit SIC industries

[1987 = 100]

Industry	SIC	1988	1989	1990	1991	1992	1993	1994	1995	1996
Miscellaneous general merchandise stores	539	100.8	109.8	116.4	121.8	136.1	160.0	161.7	165.3	163.2
Grocery stores	541	98.9	95.4	94.6	93.7	93.3	92.6	92.2	90.9	89.1
Meat and fish (seafood) markets	542	99.0	97.6	96.8	88.4	95.8	95.9	95.4	95.8	86.5
Retail bakeries	546	89.8	83.3	89.7	94.7	94.0	85.6	85.6	84.5	77.4
New and used car dealers	551	103.4	102.5	106.1	104.1	106.5	107.4	108.3	106.5	107.3
Auto and home supply stores	553	103.2	101.6	102.7	99.0	100.0	98.9	102.8	106.0	105.6
Gasoline service stations	554	103.0	105.2	102.6	104.3	109.7	112.3	114.4	117.1	114.5
Men's and boys' wear stores	561	106.0	109.6	113.7	119.2	118.2	117.7	122.6	125.1	129.0
Women's clothing stores	562	97.8	99.5	101.5	103.0	112.2	117.7	119.3	128.6	130.6
Family clothing stores	565	102.0	104.9	104.5	106.4	111.7	111.1	114.0	123.1	130.9
Shoe stores	566	102.7	107.2	106.1	105.1	111.5	110.8	120.4	124.9	131.5
Miscellaneous apparel and accessory stores	569	96.3	95.2	88.6	78.8	89.1	89.0	92.4	107.9	115.8
Furniture and homefurnishings stores	571	98.6	100.9	101.8	101.5	108.4	108.7	110.6	114.8	118.2
Household appliance stores	572	98.5	103.5	102.8	105.2	113.9	114.4	115.4	129.2	128.1
Radio, television, computer, and music stores	573	118.6	114.6	119.6	128.3	137.8	148.7	167.6	180.0	185.0
Eating and drinking places	581	102.8	102.2	104.0	103.1	102.5	103.0	101.5	101.5	98.3
Drug and proprietary stores	591	101.9	102.5	103.6	104.7	103.6	104.6	104.2	104.4	105.6
Liquor stores	592	98.2	101.1	105.2	105.9	108.4	100.3	98.4	102.6	110.1
Used merchandise stores	593	105.3	104.9	100.3	98.6	110.4	109.3	109.8	109.0	96.8
Miscellaneous shopping goods stores	594	100.7	104.2	104.2	105.0	102.7	104.8	108.7	112.7	117.0
Nonstore retailers	596	105.6	110.8	108.8	109.3	122.1	122.0	131.9	128.7	129.0
Fuel dealers	598	95.6	92.0	84.4	85.3	84.4	85.4	85.5	89.0	90.7
Retail stores, n.e.c.	599	105.9	103.1	113.7	103.2	111.6	113.1	116.3	112.6	126.6
Commercial banks	602	102.8	104.8	107.7	110.1	111.0	120.2	122.3	127.6	131.5
Hotels and motels	701	97.6	95.0	96.1	99.1	107.8	106.2	109.6	110.1	109.5
Laundry, cleaning, and garment services	721	97.2	99.7	101.8	99.2	98.3	98.6	103.6	105.2	108.2
Photographic studios, portrait	722	100.1	94.9	96.6	92.8	97.7	105.5	116.7	128.1	122.2
Beauty shops	723	95.1	99.6	96.8	94.8	99.6	95.6	99.3	102.7	104.6
Barber shops	724	108.8	111.6	100.2	94.1	112.1	120.7	117.7	114.4	123.0
Funeral services and crematories	726	102.5	97.9	90.9	89.5	103.2	98.5	104.0	99.7	97.0
Automotive repair shops	753	105.7	108.1	106.9	98.7	103.3	103.5	111.7	118.5	112.9
Motion picture theaters	783	107.1	114.3	115.8	116.0	110.8	109.3	104.8	99.3	100.5

n.e.c. = not elsewhere classified.

NOTE: Output per employee is used for SIC 4512, 13, 22.

43. Unemployment rates, approximating U.S. concepts, in nine countries, quarterly data seasonally adjusted

Country	Annual average		1997				1998			
	1997	1998	I	II	III	IV	I	II	III	IV
United States	4.9	4.5	5.2	5.0	4.9	4.7	4.6	4.4	4.5	4.4
Canada	9.2	8.3	9.6	9.4	9.0	8.9	8.6	8.4	8.3	8.0
Australia	8.6	8.0	8.7	8.7	8.6	8.3	8.1	8.1	8.2	7.7
Japan	3.4	4.1	3.3	3.4	3.4	3.5	3.7	4.2	4.3	4.4
France	12.4	11.8	12.4	12.5	12.5	12.3	12.0	11.8	11.7	11.5
Germany	7.8	7.5	7.7	7.8	7.8	7.8	7.7	7.6	7.4	7.3
Italy[1]	12.3	12.3	12.3	12.3	12.2	12.3	12.2	12.3	12.4	12.4
Sweden	10.1	8.4	10.9	10.6	9.7	9.1	8.7	8.6	8.4	7.6
United Kingdom	7.0	6.3	7.4	7.2	6.9	6.6	6.4	6.2	6.3	6.2

[1] Quarterly rates are for the first month of the quarter.

– Data not available.

NOTE: Quarterly figures for France, Germany, and the United Kingdom are calculated by applying annual adjustment factors to current published data, and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures. See "Notes on the data" for information on breaks in series. For further qualifications and historical data, see *Comparative Labor Force Statistics, 10 Countries* (Bureau of Labor Statistics, August 1996).

44. Annual data: Employment status of the working-age population, approximating U.S. concepts, 10 countries

[Numbers in thousands]

Employment status and country	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Civilian labor force										
United States[1]	123,869	125,840	126,346	128,105	129,200	131,056	132,304	133,943	136,297	137,673
Canada	14,151	14,329	14,408	14,482	14,663	14,832	14,928	15,145	15,354	15,632
Australia	8,228	8,444	8,490	8,562	8,619	8,776	9,001	9,127	9,221	9,347
Japan	61,920	63,050	64,280	65,040	65,470	65,780	65,990	66,450	67,200	67,230
France	24,170	24,300	24,490	24,570	24,660	24,760	24,810	25,080	25,150	25,260
Germany	28,840	29,410	29,760	30,030	29,960	29,850	29,640	29,500	29,410	29,350
Italy	22,530	22,670	22,940	22,910	22,760	22,640	22,700	22,820	22,850	23,000
Netherlands	6,430	6,640	6,750	6,950	7,090	7,190	7,270	7,370	7,520	–
Sweden	4,552	4,597	4,591	4,520	4,443	4,418	4,460	4,459	4,418	4,402
United Kingdom	28,580	28,730	28,610	28,410	28,310	28,280	28,480	28,620	28,760	28,750
Participation rate[2]										
United States[1]	66.5	66.5	66.2	66.4	66.3	66.6	66.6	66.8	67.1	67.1
Canada	67.5	67.3	66.7	65.9	65.5	65.3	64.8	64.9	64.8	65.1
Australia	64.0	64.6	64.1	63.9	63.6	63.9	64.6	64.6	64.3	64.4
Japan	62.2	62.6	63.2	63.4	63.3	63.1	62.9	63.0	63.2	62.8
France	56.1	56.0	56.0	55.8	55.6	55.5	55.2	55.4	55.2	–
Germany	55.2	55.3	55.4	55.1	54.3	53.7	53.0	52.5	52.2	–
Italy	47.3	47.2	47.7	47.5	48.1	47.5	47.5	47.7	47.7	47.8
Netherlands	54.7	56.1	56.5	57.8	58.5	59.0	59.3	59.7	60.5	–
Sweden	67.3	67.4	67.0	65.7	64.5	63.7	64.1	64.0	63.4	63.1
United Kingdom	64.0	64.1	63.7	63.1	62.8	62.5	62.7	62.7	62.8	–
Employed										
United States[1]	117,342	118,793	117,718	118,492	120,259	123,060	124,900	126,708	129,558	131,463
Canada	13,086	13,165	12,916	12,842	13,015	13,292	13,506	13,676	13,941	14,326
Australia	7,720	7,859	7,676	7,637	7,680	7,921	8,235	8,344	8,429	8,597
Japan	60,500	61,710	62,920	63,620	63,810	63,860	63,890	64,200	64,900	64,400
France	21,850	22,100	22,140	22,010	21,750	21,710	21,890	21,950	22,020	22,290
Germany	27,200	27,950	28,480	28,660	28,240	27,910	27,700	27,380	27,120	27,150
Italy	20,770	21,080	21,360	21,230	20,430	20,080	19,980	20,060	20,050	20,170
Netherlands	5,980	6,230	6,350	6,560	6,620	6,670	6,760	6,900	7,130	–
Sweden	4,480	4,513	4,447	4,265	4,028	3,992	4,056	4,019	3,973	4,034
United Kingdom	26,510	26,740	26,090	25,530	25,340	25,550	26,000	26,280	26,740	26,930
Employment-population ratio[3]										
United States[1]	63.0	62.8	61.7	61.5	61.7	62.5	62.9	63.2	63.8	64.1
Canada	62.4	61.9	59.8	58.4	58.2	58.5	58.6	58.6	58.9	59.7
Australia	60.1	60.1	57.9	57.0	56.6	57.7	59.1	59.1	58.8	59.2
Japan	60.8	61.3	61.8	62.0	61.7	61.3	60.9	60.9	61.0	60.2
France	50.7	50.9	50.6	50.0	49.1	48.7	48.7	48.5	48.3	–
Germany	52.0	52.6	53.0	52.6	51.1	50.2	49.6	48.7	48.1	–
Italy	43.6	43.9	44.5	44.0	43.1	42.1	41.8	41.9	41.8	41.9
Netherlands	50.9	52.6	53.2	54.5	54.7	54.7	55.1	55.9	57.4	–
Sweden	66.2	66.1	64.9	62.0	58.5	57.6	58.3	57.6	57.0	57.8
United Kingdom	59.3	59.6	58.0	56.7	56.2	56.5	57.2	57.6	58.3	–
Unemployed										
United States[1]	6,528	7,047	8,628	9,613	8,940	7,996	7,404	7,236	6,739	6,210
Canada	1,065	1,164	1,492	1,640	1,649	1,541	1,422	1,469	1,414	1,305
Australia	508	585	814	925	939	856	766	783	791	750
Japan	1,420	1,340	1,360	1,420	1,660	1,920	2,100	2,250	2,300	2,790
France	2,320	2,200	2,350	2,560	2,910	3,050	2,920	3,130	3,130	2,970
Germany	1,640	1,460	1,280	1,370	1,720	1,940	1,940	2,120	2,290	2,200
Italy	1,760	1,590	1,580	1,680	2,330	2,560	2,720	2,760	2,800	2,840
Netherlands	450	410	400	390	470	520	510	470	390	–
Sweden	72	84	144	255	415	426	404	440	445	368
United Kingdom	2,070	1,990	2,520	2,880	2,970	2,730	2,480	2,340	2,020	1,820
Unemployment rate										
United States[1]	5.3	5.6	6.8	7.5	6.9	6.1	5.6	5.4	4.9	4.5
Canada	7.5	8.1	10.4	11.3	11.2	10.4	9.5	9.7	9.2	8.3
Australia	6.2	6.9	9.6	10.8	10.9	9.7	8.5	8.6	8.6	8.0
Japan	2.3	2.1	2.1	2.2	2.5	2.9	3.2	3.4	3.4	4.1
France	9.6	9.1	9.6	10.4	11.8	12.3	11.8	12.5	12.4	11.8
Germany	5.7	5.0	4.3	4.6	5.7	6.5	6.5	7.2	7.8	7.5
Italy	7.8	7.0	6.9	7.3	10.2	11.3	12.0	12.1	12.3	12.3
Netherlands	7.0	6.2	5.9	5.6	6.6	7.2	7.0	6.4	5.2	–
Sweden	1.6	1.8	3.1	5.6	9.3	9.6	9.1	9.9	10.1	8.4
United Kingdom	7.2	6.9	8.8	10.1	10.5	9.7	8.7	8.2	7.0	6.3

[1] Data for 1994 are not directly comparable with data for 1993 and earlier years. For additional information, see the box note under "Employment and Unemployment Data" in the notes to this section.

[2] Labor force as a percent of the working-age population.

[3] Employment as a percent of the working-age population.

NOTE: See "Notes on the data" for information on breaks in series for the United States, France, Italy, the Netherlands, and Sweden. Dash indicates data not available.

45. Annual indexes of manufacturing productivity and related measures, 12 countries

[1992 = 100]

Item and country	1960	1970	1973	1980	1987	1988	1989	1990	1991	1993	1994	1995	1996	1997
Output per hour														
United States	–	–	–	71.9	94.4	98.0	97.1	97.8	98.3	102.1	108.3	114.9	117.3	122.3
Canada	40.7	59.2	69.6	75.2	91.1	91.0	92.4	95.2	95.0	103.3	105.7	108.4	106.6	109.6
Japan	14.0	38.0	48.1	63.9	81.2	84.8	89.5	95.4	99.4	100.5	101.8	109.3	111.9	117.4
Belgium	17.9	32.7	42.7	64.5	88.9	92.0	96.9	96.9	99.1	104.1	110.0	108.9	110.0	116.7
Denmark	29.9	52.7	66.9	90.3	90.6	94.1	99.6	99.1	99.6	104.5	–	–	–	–
France	23.0	45.5	53.9	70.5	86.7	92.7	97.4	99.1	98.7	101.8	110.4	114.3	117.9	125.9
Germany	29.2	52.1	61.1	77.3	88.4	91.6	94.5	99.0	101.9	100.6	107.9	111.2	115.1	121.8
Italy	19.6	36.8	43.9	64.0	85.0	86.6	89.4	92.8	95.3	104.5	107.4	113.9	114.4	117.4
Netherlands	19.5	38.6	48.8	69.8	91.7	93.8	97.2	98.6	99.6	101.9	114.2	119.9	124.4	130.2
Norway	36.7	57.8	67.6	76.7	93.3	92.1	94.6	96.6	97.5	100.6	101.4	102.0	102.6	103.2
Sweden	27.6	52.8	62.1	74.0	90.1	90.8	93.8	95.0	95.0	106.7	116.1	122.4	125.4	133.6
United Kingdom	30.2	43.3	51.4	54.4	78.1	82.6	86.2	89.2	93.9	105.6	109.2	107.4	106.1	106.6
Output														
United States	–	–	–	77.3	97.9	104.5	104.0	102.5	98.7	103.5	112.2	119.6	121.6	128.8
Canada	34.2	60.5	76.8	85.4	103.2	109.3	110.8	106.6	98.8	105.9	112.7	118.3	119.5	126.8
Japan	10.7	38.8	50.0	59.9	78.4	84.6	90.2	96.3	101.4	96.0	95.4	100.6	103.2	107.3
Belgium	30.7	57.6	70.6	78.2	88.8	93.3	99.1	101.0	100.7	97.0	101.4	104.2	104.2	109.0
Denmark	40.8	68.0	79.5	91.3	99.3	100.8	104.3	102.7	101.7	99.0	109.3	115.1	119.0	121.7
France	32.4	66.9	80.1	92.7	91.1	96.3	101.6	103.5	101.7	96.2	101.3	105.3	107.5	112.8
Germany	41.5	70.9	78.5	85.3	88.0	90.9	94.0	99.1	102.8	91.8	93.5	93.7	92.5	95.8
Italy	21.5	44.8	54.1	78.7	88.5	94.8	98.6	100.4	99.7	96.6	101.9	107.5	106.1	108.6
Netherlands	31.9	59.8	68.0	77.8	89.5	92.8	96.9	100.1	100.6	98.2	104.2	107.8	110.6	116.1
Norway	56.5	89.1	102.2	103.6	110.7	105.3	101.3	100.2	98.3	102.7	106.7	109.0	111.4	114.8
Sweden	46.5	81.7	88.5	91.8	107.7	110.2	111.6	110.6	103.6	101.3	115.7	130.1	132.9	140.3
United Kingdom	67.8	90.4	99.7	87.2	94.5	101.5	105.5	105.4	100.1	101.5	106.2	107.8	108.3	109.3
Total hours														
United States	92.1	104.4	110.4	107.5	103.8	106.6	107.1	104.8	100.4	101.4	103.6	104.0	103.7	105.3
Canada	84.2	102.2	110.4	113.6	113.2	120.2	120.0	112.0	103.9	102.5	106.6	109.1	112.1	115.8
Japan	76.3	102.3	104.0	93.8	96.6	99.8	100.8	100.9	102.0	95.6	93.7	92.0	92.2	91.4
Belgium	172.1	176.1	165.5	121.3	99.9	101.4	102.3	104.2	101.6	93.2	92.2	95.6	94.7	93.3
Denmark	136.5	129.0	118.8	101.1	109.6	107.2	104.7	103.7	102.1	94.8	–	–	–	–
France	140.6	147.0	148.7	131.5	105.1	104.0	104.4	104.5	103.0	94.5	91.8	92.0	91.2	89.7
Germany	142.4	136.1	128.4	110.3	99.6	99.2	99.5	100.1	100.9	91.3	86.7	84.3	80.4	78.6
Italy	109.6	121.8	123.4	123.0	104.1	109.5	110.2	108.2	104.6	92.4	94.8	94.4	92.8	92.5
Netherlands	163.3	155.1	139.3	111.4	97.6	98.9	99.7	101.6	101.0	96.4	91.3	90.0	88.9	89.2
Norway	154.0	154.3	151.2	135.0	118.6	114.3	107.1	103.7	100.8	102.1	105.2	106.9	108.6	111.3
Sweden	168.3	154.7	142.5	124.0	119.5	121.4	119.0	116.4	109.0	94.9	99.6	106.3	106.0	105.0
United Kingdom	224.6	208.8	194.1	160.5	121.0	122.8	122.4	118.1	106.6	96.1	97.3	100.4	102.0	102.5
Compensation per hour														
United States	14.9	23.8	28.7	55.8	80.9	84.2	86.9	91.0	95.8	102.9	105.8	108.3	110.7	115.3
Canada	10.4	17.8	22.0	47.7	75.3	77.9	82.5	89.5	94.7	99.8	100.4	103.7	106.0	108.8
Japan	4.3	16.5	26.8	58.6	77.9	79.2	84.2	90.7	95.9	104.6	106.7	109.5	110.5	114.0
Belgium	5.6	14.1	21.7	52.7	79.3	81.0	85.2	89.9	95.5	104.9	108.4	111.6	114.1	116.5
Denmark	4.6	13.3	20.5	49.6	80.1	82.9	87.7	92.7	95.9	104.6	–	–	–	–
France	4.3	10.5	14.9	41.3	79.7	82.7	87.2	91.8	96.3	103.6	106.2	107.7	109.4	112.6
Germany	8.2	20.8	29.1	53.9	76.6	79.6	83.4	89.4	95.1	105.9	111.7	117.7	123.7	126.6
Italy	1.6	4.6	7.0	27.9	66.1	68.7	75.5	84.0	93.1	107.1	106.6	112.3	119.4	125.2
Netherlands	6.4	20.3	31.8	64.7	87.8	87.7	88.5	90.8	95.2	103.7	108.2	110.6	113.9	117.0
Norway	4.7	11.8	17.0	39.0	78.5	83.3	87.2	92.3	97.5	101.5	104.4	109.2	114.4	119.6
Sweden	4.1	10.8	15.2	37.4	67.3	71.7	79.4	87.6	95.4	98.0	101.1	106.2	113.4	118.3
United Kingdom	3.1	6.3	9.5	33.1	64.7	68.9	73.6	82.2	92.1	105.9	109.2	110.9	112.2	116.8
Unit labor costs: National currency basis														
United States	–	–	–	77.6	85.7	85.9	89.5	93.1	97.5	100.8	97.7	94.3	94.3	94.3
Canada	25.6	30.0	31.6	63.4	82.6	85.6	89.3	94.0	99.7	96.6	95.0	95.7	99.4	99.3
Japan	30.9	43.3	55.7	91.7	96.0	93.4	94.0	95.0	96.5	104.1	104.9	100.1	98.8	97.1
Belgium	31.2	43.2	50.8	81.7	89.3	88.0	87.9	92.7	96.3	100.8	98.6	102.5	103.7	99.8
Denmark	15.4	25.2	30.6	55.0	88.4	88.2	88.1	93.6	96.3	100.1	93.0	93.4	92.3	95.3
France	18.7	23.0	27.6	58.6	92.0	89.3	89.5	92.6	97.6	101.8	96.2	94.2	92.8	89.4
Germany	28.0	39.9	47.6	69.6	86.7	86.9	88.3	90.3	93.3	105.3	103.6	105.9	107.5	103.9
Italy	8.0	12.6	16.0	43.7	77.8	79.4	84.4	90.5	97.7	102.5	99.2	98.6	104.4	106.6
Netherlands	33.0	52.7	65.1	92.7	95.8	93.5	91.1	92.1	95.6	101.8	94.8	92.9	91.5	89.9
Norway	12.9	20.4	25.1	50.8	84.1	90.4	92.2	95.6	100.0	100.9	102.9	107.1	111.5	115.9
Sweden	14.9	20.5	24.4	50.6	74.7	79.0	84.7	92.3	100.4	91.8	87.0	86.8	90.4	88.5
United Kingdom	10.1	14.6	18.4	60.9	82.8	83.4	85.5	92.1	98.1	100.3	100.1	103.3	105.8	109.5
Unit labor costs: U.S. dollar basis														
United States	–	–	–	77.6	85.7	85.9	89.5	93.1	97.5	100.8	97.7	94.3	94.3	94.3
Canada	31.9	34.8	38.1	65.6	75.3	84.1	91.1	97.3	105.1	90.5	84.0	84.2	88.1	86.7
Japan	10.9	15.3	26.1	51.5	84.2	92.4	86.3	83.1	90.9	118.8	130.1	135.1	115.1	101.7
Belgium	20.1	28.0	42.1	90.0	76.8	76.9	71.7	89.2	90.6	93.7	94.8	111.8	107.6	89.6
Denmark	13.5	20.3	30.7	58.9	77.9	79.0	72.6	91.3	90.8	93.2	88.3	100.7	96.1	87.0
France	20.2	22.0	32.9	73.5	81.0	79.3	74.3	90.0	91.5	95.1	91.8	100.0	96.1	81.1
Germany	10.5	17.1	28.1	59.9	75.3	77.2	73.3	87.3	87.8	99.4	99.8	115.5	111.6	93.5
Italy	15.9	24.7	34.0	62.9	73.9	75.1	75.8	93.0	97.0	80.3	75.8	74.6	83.4	77.1
Netherlands	15.4	25.6	41.2	82.1	83.1	83.1	75.5	88.9	89.8	96.3	91.6	101.2	95.4	81.0
Norway	11.3	17.8	27.2	63.9	77.5	86.1	82.9	95.0	95.7	88.3	90.7	105.0	107.3	101.6
Sweden	16.8	23.0	32.7	69.6	68.5	75.0	76.4	90.8	96.6	68.6	65.7	70.8	78.5	67.5
United Kingdom	16.1	19.7	25.5	80.1	76.9	84.1	79.3	93.0	98.2	85.3	86.8	92.3	93.4	101.5

– Data not available.

46. Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 full-time workers[3]											
	1986	1987	1988	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]	1997[4]
PRIVATE SECTOR[5]												
Total cases	7.9	8.3	8.6	8.6	8.8	8.4	8.9	8.5	8.4	8.1	7.4	7.1
Lost workday cases	3.6	3.8	4.0	4.0	4.1	3.9	3.9	3.8	3.8	3.6	3.4	3.3
Lost workdays	65.8	69.9	76.1	78.7	84.0	86.5	93.8	–	–	–	–	–
Agriculture, forestry, and fishing[5]												
Total cases	11.2	11.2	10.9	10.9	11.6	10.8	11.6	11.2	10.0	9.7	8.7	8.4
Lost workday cases	5.6	5.7	5.6	5.7	5.9	5.4	5.4	5.0	4.7	4.3	3.9	4.1
Lost workdays	93.6	94.1	101.8	100.9	112.2	108.3	126.9	–	–	–	–	–
Mining												
Total cases	7.4	8.5	8.8	8.5	8.3	7.4	7.3	6.8	6.3	6.2	5.4	5.9
Lost workday cases	4.1	4.9	5.1	4.8	5.0	4.5	4.1	3.9	3.9	3.9	3.2	3.7
Lost workdays	125.9	144.0	152.1	137.2	119.5	129.6	204.7	–	–	–	–	–
Construction												
Total cases	15.2	14.7	14.6	14.3	14.2	13.0	13.1	12.2	11.8	10.6	9.9	9.5
Lost workday cases	6.9	6.8	6.8	6.8	6.7	6.1	5.8	5.5	5.5	4.9	4.5	4.4
Lost workdays	134.5	135.8	142.2	143.3	147.9	148.1	161.9	–	–	–	–	–
General building contractors:												
Total cases	14.9	14.2	14.0	13.9	13.4	12.0	12.2	11.5	10.9	9.8	9.0	8.5
Lost workday cases	6.6	6.5	6.4	6.5	6.4	5.5	5.4	5.1	5.1	4.4	4.0	3.7
Lost workdays	122.7	134.0	132.2	137.3	137.6	132.0	142.7	–	–	–	–	–
Heavy construction, except building:												
Total cases	14.7	14.5	15.1	13.8	13.8	12.8	12.1	11.1	10.2	9.9	9.0	8.7
Lost workday cases	6.3	6.4	7.0	6.5	6.3	6.0	5.4	5.1	5.0	4.8	4.3	4.3
Lost workdays	132.9	139.1	162.3	147.1	144.6	160.1	165.8	–	–	–	–	–
Special trades contractors:												
Total cases	15.6	15.0	14.7	14.6	14.7	13.5	13.8	12.8	12.5	11.1	10.4	10.0
Lost workday cases	7.2	7.1	7.0	6.9	6.9	6.3	6.1	5.8	5.8	5.0	4.8	4.7
Lost workdays	140.4	135.7	141.1	144.9	153.1	151.3	168.3	–	–	–	–	–
Manufacturing												
Total cases	10.6	11.9	13.1	13.1	13.2	12.7	12.5	12.1	12.2	11.6	10.6	10.3
Lost workday cases	4.7	5.3	5.7	5.8	5.8	5.6	5.4	5.3	5.5	5.3	4.9	4.8
Lost workdays	85.2	95.5	107.4	113.0	120.7	121.5	124.6	–	–	–	–	–
Durable goods:												
Total cases	11.0	12.5	14.2	14.1	14.2	13.6	13.4	13.1	13.5	12.8	11.6	11.3
Lost workday cases	4.8	5.4	5.9	6.0	6.0	5.7	5.5	5.4	5.7	5.6	5.1	5.1
Lost workdays	87.1	96.8	111.1	116.5	123.3	122.9	126.7	–	–	–	–	–
Lumber and wood products:												
Total cases	18.9	18.9	19.5	18.4	18.1	16.8	16.3	15.9	15.7	14.9	14.2	13.5
Lost workday cases	9.7	9.6	10.0	9.4	8.8	8.3	7.6	7.6	7.7	7.0	6.8	6.5
Lost workdays	177.2	176.5	189.1	177.5	172.5	172.0	165.8	–	–	–	–	–
Furniture and fixtures:												
Total cases	15.2	15.4	16.6	16.1	16.9	15.9	14.8	14.6	15.0	13.9	12.2	12.0
Lost workday cases	6.3	6.7	7.3	7.2	7.8	7.2	6.6	6.5	7.0	6.4	5.4	5.8
Lost workdays	103.0	103.6	115.7	–	–	–	128.4	–	–	–	–	–
Stone, clay, and glass products:												
Total cases	13.6	14.9	16.0	15.5	15.4	14.8	13.6	13.8	13.2	12.3	12.4	11.8
Lost workday cases	6.5	7.1	7.5	7.4	7.3	6.8	6.1	6.3	6.5	5.7	6.0	5.7
Lost workdays	126.0	135.8	141.0	149.8	160.5	156.0	152.2	–	–	–	–	–
Primary metal industries:												
Total cases	13.6	17.0	19.4	18.7	19.0	17.7	17.5	17.0	16.8	16.5	15.0	15.0
Lost workday cases	6.1	7.4	8.2	8.1	8.1	7.4	7.1	7.3	7.2	7.2	6.8	7.2
Lost workdays	125.5	145.8	161.3	168.3	180.2	169.1	175.5	–	–	–	–	–
Fabricated metal products:												
Total cases	16.0	17.0	18.8	18.5	18.7	17.4	16.8	16.2	16.4	15.8	14.4	14.2
Lost workday cases	6.8	7.2	8.0	7.9	7.9	7.1	6.6	6.7	6.7	6.9	6.2	6.4
Lost workdays	115.5	121.9	138.8	147.6	155.7	146.6	144.0	–	–	–	–	–
Industrial machinery and equipment:												
Total cases	10.7	11.3	12.1	12.1	12.0	11.2	11.1	11.1	11.6	11.2	9.9	10.0
Lost workday cases	4.2	4.4	4.7	4.8	4.7	4.4	4.2	4.2	4.4	4.4	4.0	4.1
Lost workdays	72.0	72.7	82.8	86.8	88.9	86.6	87.7	–	–	–	–	–
Electronic and other electrical equipment:												
Total cases	6.4	7.2	8.0	9.1	9.1	8.6	8.4	8.3	8.3	7.6	6.8	6.6
Lost workday cases	2.7	3.1	3.3	3.9	3.8	3.7	3.6	3.5	3.6	3.3	3.1	3.1
Lost workdays	49.8	55.9	64.6	77.5	79.4	83.0	81.2	–	–	–	–	–
Transportation equipment:												
Total cases	9.6	13.5	17.7	17.7	17.8	18.3	18.7	18.5	19.6	18.6	16.3	15.4
Lost workday cases	4.1	5.7	6.6	6.8	6.9	7.0	7.1	7.1	7.8	7.9	7.0	6.6
Lost workdays	79.1	105.7	134.2	138.6	153.7	166.1	186.6	–	–	–	–	–
Instruments and related products:												
Total cases	5.3	5.8	6.1	5.6	5.9	6.0	5.9	5.6	5.9	5.3	5.1	4.8
Lost workday cases	2.3	2.4	2.6	2.5	2.7	2.7	2.7	2.5	2.7	2.4	2.3	2.3
Lost workdays	42.2	43.9	51.5	55.4	57.8	64.4	65.3	–	–	–	–	–
Miscellaneous manufacturing industries:												
Total cases	10.2	10.7	11.3	11.1	11.3	11.3	10.7	10.0	9.9	9.1	9.5	8.9
Lost workday cases	4.3	4.6	5.1	5.1	5.1	5.1	5.0	4.6	4.5	4.3	4.4	4.2
Lost workdays	70.9	81.5	91.0	97.6	113.1	104.0	108.2	–	–	–	–	–

See footnotes at end of table.

46. Continued—Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 full-time workers[3]											
	1986	1987	1988	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]	1997[4]
Nondurable goods:												
Total cases	10.0	11.1	11.4	11.6	11.7	11.5	11.3	10.7	10.5	9.9	9.2	8.8
Lost workday cases	4.6	5.1	5.4	5.5	5.6	5.5	5.3	5.0	5.1	4.9	4.6	4.4
Lost workdays	82.3	93.5	101.7	107.8	116.9	119.7	121.8	–	–	–	–	–
Food and kindred products:												
Total cases	16.5	17.7	18.5	18.5	20.0	19.5	18.8	17.6	17.1	16.3	15.0	14.5
Lost workday cases	8.0	8.6	9.2	9.3	9.9	9.9	9.5	8.9	9.2	8.7	8.0	8.0
Lost workdays	137.8	153.7	169.7	174.7	202.6	207.2	211.9	–	–	–	–	–
Tobacco products:												
Total cases	6.7	8.6	9.3	8.7	7.7	6.4	6.0	5.8	5.3	5.6	6.7	5.9
Lost workday cases	2.5	2.5	2.9	3.4	3.2	2.8	2.4	2.3	2.4	2.6	2.8	2.7
Lost workdays	45.6	46.4	53.0	64.2	62.3	52.0	42.9	–	–	–	–	–
Textile mill products:												
Total cases	7.8	9.0	9.6	10.3	9.6	10.1	9.9	9.7	8.7	8.2	7.8	6.7
Lost workday cases	3.1	3.6	4.0	4.2	4.0	4.4	4.2	4.1	4.0	4.1	3.6	3.1
Lost workdays	59.3	65.9	78.8	81.4	85.1	88.3	87.1	–	–	–	–	–
Apparel and other textile products:												
Total cases	6.7	7.4	8.1	8.6	8.8	9.2	9.5	9.0	8.9	8.2	7.4	7.0
Lost workday cases	2.7	3.1	3.5	3.8	3.9	4.2	4.0	3.8	3.9	3.6	3.3	3.1
Lost workdays	49.4	59.5	68.2	80.5	92.1	99.9	104.6	–	–	–	–	–
Paper and allied products:												
Total cases	10.5	12.8	13.1	12.7	12.1	11.2	11.0	9.9	9.6	8.5	7.9	7.3
Lost workday cases	4.7	5.8	5.9	5.8	5.5	5.0	5.0	4.6	4.5	4.2	3.8	3.7
Lost workdays	99.5	122.3	124.3	132.9	124.8	122.7	125.9	–	–	–	–	–
Printing and publishing:												
Total cases	6.5	6.7	6.6	6.9	6.9	6.7	7.3	6.9	6.7	6.4	6.0	5.7
Lost workday cases	2.9	3.1	3.2	3.3	3.3	3.2	3.2	3.1	3.0	3.0	2.8	2.7
Lost workdays	50.8	55.1	59.8	63.8	69.8	74.5	74.8	–	–	–	–	–
Chemicals and allied products:												
Total cases	6.3	7.0	7.0	7.0	6.5	6.4	6.0	5.9	5.7	5.5	4.8	4.8
Lost workday cases	2.7	3.1	3.3	3.2	3.1	3.1	2.8	2.7	2.8	2.7	2.4	2.3
Lost workdays	49.4	58.8	59.0	63.4	61.6	62.4	64.2	–	–	–	–	–
Petroleum and coal products:												
Total cases	7.1	7.3	7.0	6.6	6.6	6.2	5.9	5.2	4.7	4.8	4.6	4.3
Lost workday cases	3.2	3.1	3.2	3.3	3.1	2.9	2.8	2.5	2.3	2.4	2.5	2.2
Lost workdays	67.5	65.9	68.4	68.1	77.3	68.2	71.2	–	–	–	–	–
Rubber and miscellaneous plastics products:												
Total cases	14.0	15.9	16.3	16.2	16.2	15.1	14.5	13.9	14.0	12.9	12.3	11.9
Lost workday cases	6.6	7.6	8.1	8.0	7.8	7.2	6.8	6.5	6.7	6.5	6.3	5.8
Lost workdays	118.2	130.8	142.9	147.2	151.3	150.9	153.3	–	–	–	–	–
Leather and leather products:												
Total cases	10.5	12.4	11.4	13.6	12.1	12.5	12.1	12.1	12.0	11.4	10.7	10.6
Lost workday cases	4.8	5.8	5.6	6.5	5.9	5.9	5.4	5.5	5.3	4.8	4.5	4.3
Lost workdays	83.4	114.5	128.2	130.4	152.3	140.8	128.5	–	–	–	–	–
Transportation and public utilities												
Total cases	8.2	8.4	8.9	9.2	9.6	9.3	9.1	9.5	9.3	9.1	8.7	8.2
Lost workday cases	4.8	4.9	5.1	5.3	5.5	5.4	5.1	5.4	5.5	5.2	5.1	4.8
Lost workdays	102.1	108.1	118.6	121.5	134.1	140.0	144.0	–	–	–	–	–
Wholesale and retail trade												
Total cases	7.7	7.7	7.8	8.0	7.9	7.6	8.4	8.1	7.9	7.5	6.8	6.7
Lost workday cases	3.3	3.4	3.5	3.6	3.5	3.4	3.5	3.4	3.4	3.2	2.9	3.0
Lost workdays	54.0	56.1	60.9	63.5	65.6	72.0	80.1	–	–	–	–	–
Wholesale trade:												
Total cases	7.2	7.4	7.6	7.7	7.4	7.2	7.6	7.8	7.7	7.5	6.6	6.5
Lost workday cases	3.6	3.7	3.8	4.0	3.7	3.7	3.6	3.7	3.8	3.6	3.4	3.2
Lost workdays	62.5	64.0	69.2	71.9	71.5	79.2	82.4	–	–	–	–	–
Retail trade:												
Total cases	7.8	7.8	7.9	8.1	8.1	7.7	8.7	8.2	7.9	7.5	6.9	6.8
Lost workday cases	3.2	3.3	3.4	3.4	3.4	3.3	3.4	3.3	3.3	3.0	2.8	2.9
Lost workdays	50.5	52.9	57.6	60.0	63.2	69.1	79.2	–	–	–	–	–
Finance, insurance, and real estate												
Total cases	2.0	2.0	2.0	2.0	2.4	2.4	2.9	2.9	2.7	2.6	2.4	2.2
Lost workday cases	.9	.9	.9	.9	1.1	1.1	1.2	1.2	1.1	1.0	.9	0.9
Lost workdays	17.1	14.3	17.2	17.6	27.3	24.1	32.9	–	–	–	–	–
Services												
Total cases	5.3	5.5	5.4	5.5	6.0	6.2	7.1	6.7	6.5	6.4	6.0	5.6
Lost workday cases	2.5	2.7	2.6	2.7	2.8	2.8	3.0	2.8	2.8	2.8	2.6	2.5
Lost workdays	43.0	45.8	47.7	51.2	56.4	60.0	68.6	–	–	–	–	–

[1] Data for 1989 and subsequent years are based on the *Standard Industrial Classification Manual*, 1987 Edition. For this reason, they are not strictly comparable with data for the years 1985–88, which were based on the *Standard Industrial Classification Manual*, 1972 Edition, 1977 Supplement.

[2] Beginning with the 1992 survey, the annual survey measures only nonfatal injuries and illnesses, while past surveys covered both fatal and nonfatal incidents. To better address fatalities, a basic element of workplace safety, BLS implemented the Census of Fatal Occupational Injuries.

[3] The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as (N/EH) X 200,000, where:

N = number of injuries and illnesses or lost workdays;

EH = total hours worked by all employees during the calendar year; and

200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

[4] Beginning with the 1993 survey, lost workday estimates will not be generated. As of 1992, BLS began generating percent distributions and the median number of days away from work by industry and for groups of workers sustaining similar work disabilities.

[5] Excludes farms with fewer than 11 employees since 1976.

– Data not available.

47. Fatal occupational injuries by event or exposure, 1992–97

Event or exposure[1]	Fatalities			
	1992-96	1996[2]	1997	
	Average	Number	Number	Percent
Total	6,331	6,202	6,218	100
Transportation incidents	2,587	2,601	2,599	42
Highway incident	1,287	1,346	1,387	22
Collision between vehicles, mobile equipment	640	667	639	10
Moving in same direction	104	96	103	2
Moving in opposite directions, oncoming	228	220	229	4
Moving in intersection	125	153	142	2
Vehicle struck stationary object or equipment	231	243	280	5
Noncollision incident	343	352	384	6
Jackknifed or overturned—no collision	250	266	295	5
Nonhighway (farm, industrial premises) incident	400	374	377	6
Overturned	213	206	216	3
Aircraft	334	324	261	4
Worker struck by a vehicle	369	353	367	6
Water vehicle incident	106	119	109	2
Railway	78	74	93	1
Assaults and violent acts	1,275	1,165	1,103	18
Homicides	1,032	927	856	14
Shooting	839	761	705	11
Stabbing	78	80	73	1
Other, including bombing	115	86	78	1
Self-inflicted injuries	213	204	212	3
Contact with objects and equipment	998	1,010	1,034	17
Struck by object	568	582	578	9
Struck by falling object	365	403	384	6
Struck by flying object	69	58	53	1
Caught in or compressed by equipment or objects	289	285	320	5
Caught in running equipment or machinery	147	146	189	3
Caught in or crushed in collapsing materials	122	131	118	2
Falls	645	691	715	11
Fall to lower level	562	610	652	10
Fall from ladder	87	97	116	2
Fall from roof	130	149	154	2
Fall from scaffold, staging	79	88	87	1
Fall on same level	56	52	44	1
Exposure to harmful substances or environments	596	533	550	9
Contact with electric current	327	281	297	5
Contact with overhead power lines	128	116	138	2
Contact with temperature extremes	42	33	40	1
Exposure to caustic, noxious, or allergenic substances	121	123	123	2
Inhalation of substances	75	76	59	1
Oxygen deficiency	105	95	87	1
Drowning, submersion	81	70	70	1
Fires and explosions	193	185	196	3
Other events or exposures[3]	37	17	21	–

[1] Based on the 1992 BLS Occupational Injury and Illness Classification Structures.

[2] The BLS news release issued August 7, 1997, reported a total of 6,112 fatal work injuries for calendar year 1996. Since then, an additional 90 job-related fatalities were identified, bringing the total job-related fatality count for 1996 to 6,202.

[3] Includes the category "Bodily reaction and exertion."

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding. Dashes indicate less that 0.5 percent or data that are not available or that do not meet publication criteria.

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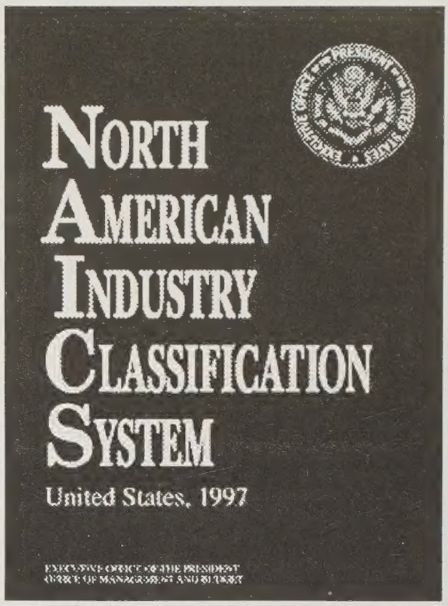
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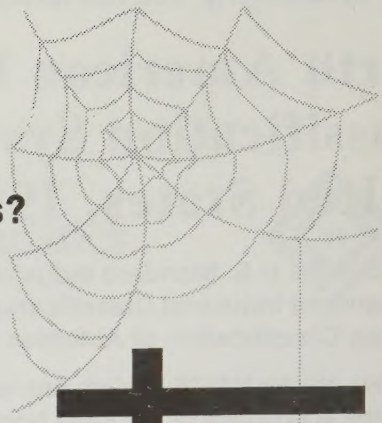

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Producer Price Indexes	June 11	May	July 14	June	August 13	July	2; 31–33
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Employment Cost Indexes			July 29	2nd quarter			1–3; 21–24